MAY 1952

American Engineer

RR

Don't Miss . . .

Is Useful Atomic Power Only A Year Away?

By George W. Malone, P. E.
United States Senator from Nevada

UNIVERSITY OF MICHIGAN
MAY 12 1952
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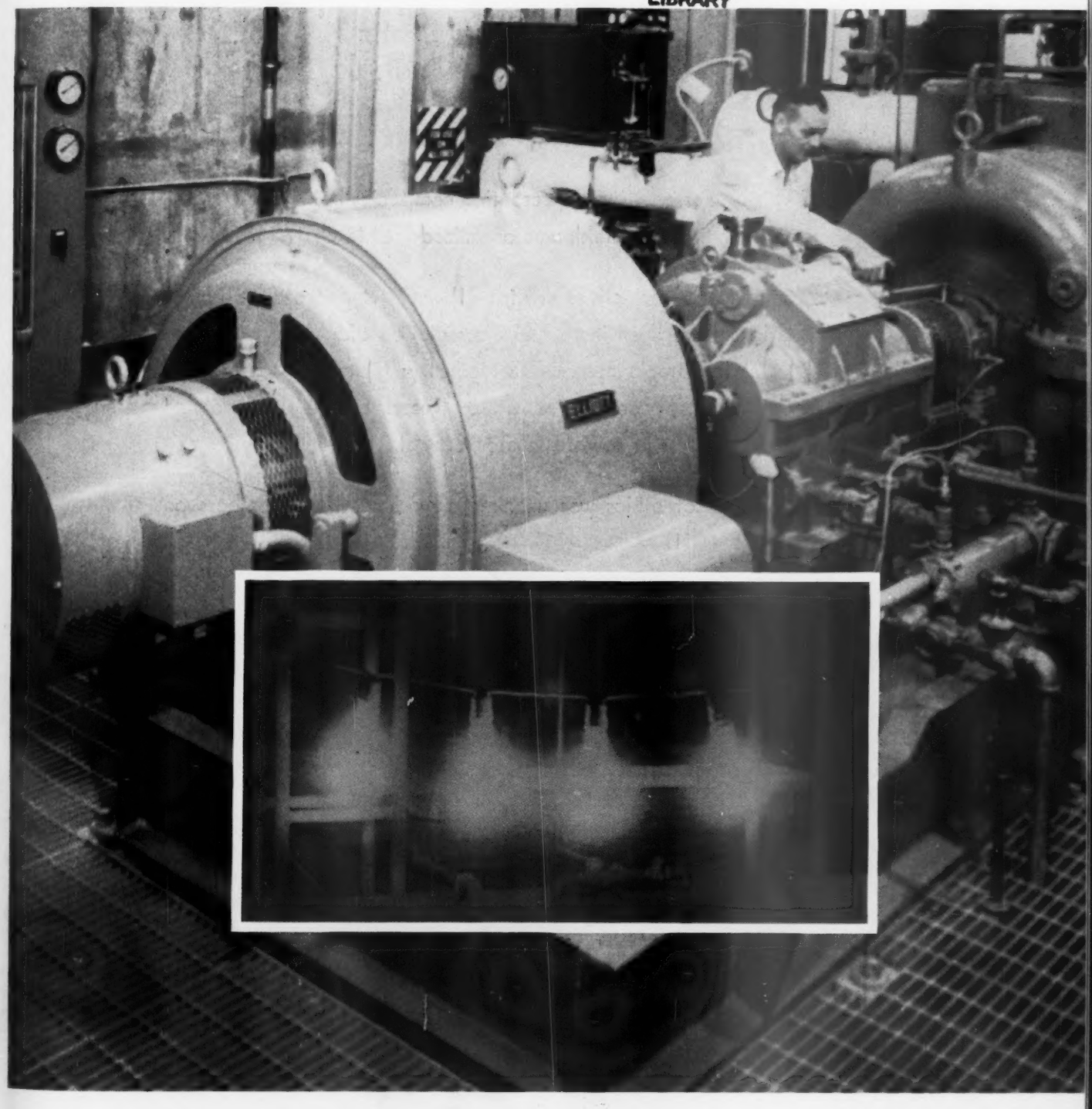

NSPE Annual Meeting, June 5-7, Tulsa

An historic picture: Using the atom as a source of electric power

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- This new association, representing companies in the photogrammetric engineering field, was organized on March 1, 1951.

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Letters

No Shortage . . .

Dear Editor:

It seems that it is necessary for more engineers to express their opinion regarding the widespread feeling that there is a shortage of engineers. It is my opinion that there is no shortage of engineers for the following reasons:

1. Employment like other markets follows the law of supply and demand, hence if a shortage existed, engineering salaries and fees would not be subnormal as compared to labor and other professions.
2. During World War II despite the fact that the cry of shortage existed, engineers were treated with absolutely no respect by either the draft boards, the armed services, or industry, starting salaries for engineers were lower in many cases than starting salaries for stenographers and clerks.
3. Among my engineering friends I have found a widespread feeling that the recent ballyhoo about engineering shortage is purely a scheme to insure an engineering surplus hence low wages, insecurity, and subsequent harm to the overall defense and peace efforts.

It will be appreciated if you would publish this letter in your "Letters" Column.

IRVING DEUTSCH, P.E.,
Member N.Y.S.P.E. Soc.,
E. Meadow, N. Y.

Dear Editor:

The irony of it all. I just finished reading the March issue of the AMERICAN ENGINEER and I was almost ready to concede that the engineers, industrially employed, were unappreciated and underpaid. I was sure that a higher rate of pay would tend to relieve the shortage in critical industries. However I then opened "Chemical Week," March 15, 1952 and on page 12 in the Newsletter, I read *"If you've been paying premium prices for engineers* you can expect a crackdown by the Office of Salary Stabilization." Underlining theirs.) Excuse me while I reread the AMERICAN ENGINEER.

RICHARD A. MULLINS, P.E.
Oakwood, Illinois.

Postscripts . . .

Dear Editor:

Please accept my congratulations on your new feature, "Professional Postscripts."

It has long been my opinion that a publication sponsored by a society should allot space for expression of opinions of members of that society.

I sometimes have opinions which require expression in one form or another. Perhaps Professional Postscripts would be a suitable medium.

I. E. MORRIS, P.E.,
Atlanta, Ga.

Dear Editor:

My thanks to Engineer Lowell for his article in Professional Postscripts debunking the "engineer shortage," and my congratulations to you for publishing it. The success of the NSPE will depend largely upon its ability to understand and solve the economic problems of the engineers. . . .

MILTON H. BLEZ,
Monroe, La.

(Continued on next page)

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Letters

(*Continued from page* 3)

March Issue . . .

Dear Editor:

. . . I think that you are doing a great job with the magazine. The March number is full of excellent material. I am glad to see the emphasis that you are giving to personality development of the engineers. It is so necessary.

I believe that one of the three forum members, Walter Evans is an old boyhood friend of mine. His face is most familiar. If he is, I used to watch him work on his homemade radio on 66th Street in Chicago, thirty-eight years ago.

If I have the time, I would like to comment on that part of the forum discussion by the Bureau of Mines chief. . . .

DON V. PURINGTON, P.E.
Houston, Texas.

Dear Editor:

You, together with the staff writer who prepared the article "How to Prepare for An Executive Position" are to be congratulated. From the membership standpoint this type of material is the very best type of sales incentive that we can have.

From the standpoint of the young engineer, the advice in this article is priceless. I would like to place a copy of this article, and the previous article you published three months ago, in the hands of every engineering student in the United States, and of course particularly here at A. and M. College. I believe that the idea as set forth will help many young engineers to develop along lines that will be the best for both their personal advancement and the advancement of our profession.

I will certainly appreciate receiving as many spare copies as you can send me of this article or the previous article for distribution to our membership group here in the state. I wish to experiment with this particular type of sales approach.

HERBERT L. JONES, P.E.,
Professor of Electrical Engineering,
Oklahoma Institute of Technology,
Stillwater, Oklahoma.

February Issue . . .

Dear Editor:

My sincere congratulations on your publishing of a very excellent February issue. This is certainly a publication which I shall want to keep for all times. The constructive and enlightening article titled "Miracle Age of Engineering" is in many ways an invaluable reference guide to the accomplishments of engineering in the past 25 years.

May I also say that in all other ways the magazine is showing continued improvement under your editorship. It is a great pleasure to receive and read the magazine and I shall certainly look forward to future copies.

MICHAEL A. SPRONCK,
EIT Member, New York State Chapter,
New York, N. Y.

Dear Editor:

Your February article, Miracle Age of Engineering was most interesting and informative.

However, I am inclined to think that you missed one of the real miracles of transportation development, especially from the general rather than the specialized angle. Perhaps the point can best be made by a recent quote from your fellow townsman, Chester C. Thompson, President, The American Waterways Operators, Incorporated:

"Water transportation (on barge channels), is cheap transportation—always has been and always will be unless artificial and synthetic restrictions are imposed upon it. While most of its competitors *have increased freight rates very substantially in the last few years,* the rates charged by water transportation have not been increased to any appreciable degree and, in many instances, *inland water freight rates* on several bulk commodities (moving in great quantities) *are actually lower* than they were in 1941 or before Pearl Harbor."

Likely, very many of your readers would be interested by an article based upon the comments of the engineers responsible for develomepnts which have made such an achievement possible in this time of rapidly increasing costs.

Since I can not speak authoritatively on this subject, being a land-bound resident of the Southwestern hinterland, please omit my name should you publish.

(*Name omitted by request.*)

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New York Society of Professional Engineers—Annual Meeting. May 1, 2 and 3. Hotel New Yorker, New York.

Corporation of Professional Engineers of Quebec—Annual Meeting. May 14, 15 and 16. Chateau Frontenac, Quebec City.

California Society of Professional Engineers—Annual Meeting. May 15, 16 and 17. Biltmore Hotel, Los Angeles.

Pennsylvania Society of Professional Engineers—Annual Meeting. May 16, 17. William Penn Hotel, Pittsburgh.

Massachusetts Society of Professional Engineers—Annual Meeting. May 23, University Club, Boston.

National Society of Professional Engineers—Annual Meeting. June 5, 6 and 7. Tulsa.

Georgia Society of Professional Engineers—6th Annual Summer Outing. June 20 and 21. Radium Springs Hotel, Albany.

NEXT MONTH

Eric Johnston, Chairman of the President's International Development Advisory Committee, will discuss *Point Four — Global Give-away or Path to Peace?*

Don't miss it — next month in *The American Engineer!*

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American Engineer

MAY
1952

"We Americans are letting our freedoms slip away. All of us, especially professional people, should start leading the way back to the middle of the road through a greater interest in public affairs . . ."

L. L. Dresser, P. E.,
President, N.S.P.E.

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Committee, NSPE

SPECIAL ARTICLES

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By Senator George W. Malone, P.E., of Nevada. Are we closer than we think to the day when atomic power will be practical? This impressive article is written by an outstanding engineer-senator.

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A Photo Story. Here is a graphic presentation of how professional engineers are improving America's products.

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By David A. Heller, Staff Writer. Aerial mapping is being used by engineers to speed up projects and to reduce costs.

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J-V Associates,
274 Madison Avenue,
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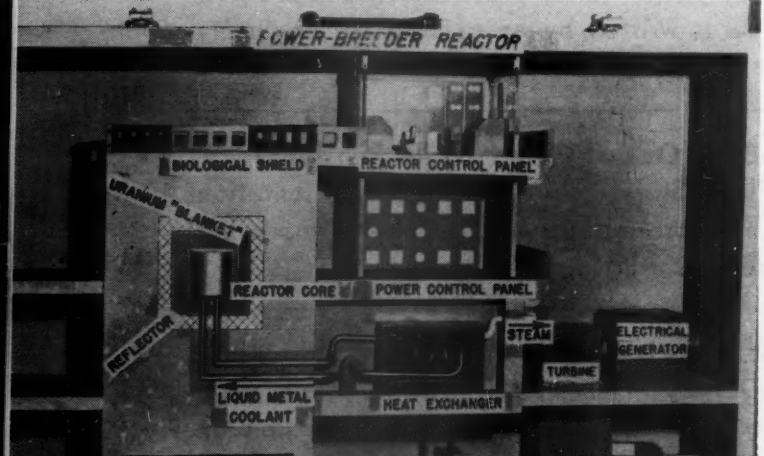
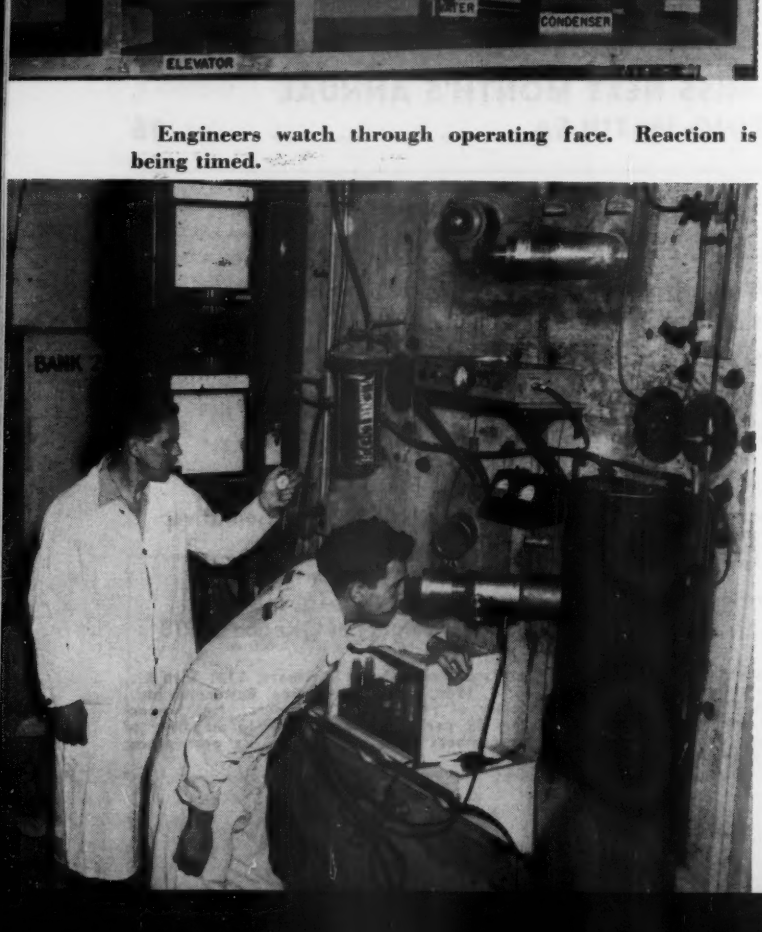
The American Engineer is published monthly by the National Society of Professional Engineers, 1121 15th St., N. W., Washington 5, D. C. Entered as Second Class Matter Feb. 8, 1948, at the Post Office, Baltimore, Md., under act of March 3, 1879. Copyright, 1952, by the National Society of Professional Engineers. Not responsible for opinions expressed in signed articles. Subscription Rates: $2 per year in advance to members of NSPE and its Affiliated Societies; $3 per year in advance to non-members in U. S. A. and its possessions, Canada, and Mexico. Foreign, $4 per year. Single copy, 35c.

Above: Operator controls movements of materials in area of dangerous radiation by remote control. Three-dimensional television enables him to see what's going on.

Below: Model of combined Power-Breeder reactor.



Engineers watch through operating face. Reaction is being timed.



Is Useful Atomic Power Only A Year Away?

The author, a member of the United States Senate Committee on Public Works, formerly Chairman of the Nevada Board of Engineering Registration, and the only registered engineer in the Senate, gives an interesting preview of some of the things which may be in store for us when atomic energy is available for peacetime use.

By GEORGE W. MALONE, P.E.
United States Senator from Nevada

IT IS altogether conceivable that, in the reasonably near future, atomic energy may make obsolete all engineers dealing with power.

Having been an irrigation and power engineer for more than 30 years myself, I am convinced that the obvious advantages of obtaining power from atomic reactors will make inevitable the rapid development of the atom as a source of electric power. These advantages include a compact power plant which will enable a fuel occupying perhaps the space of a good-sized dry goods box to drive a submarine underwater for as long as six months and enable it to travel almost twice as fast as any known submarine.

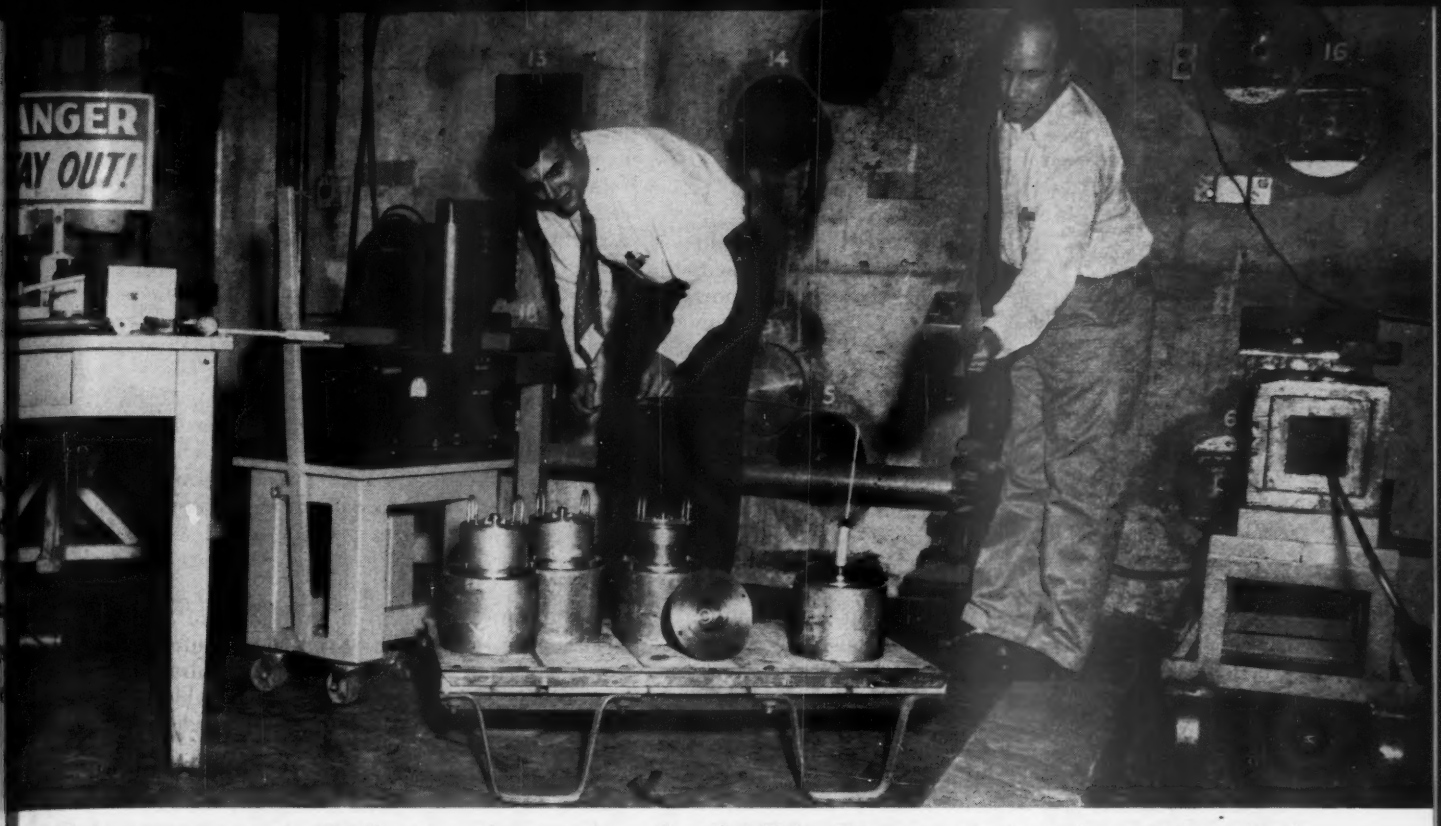
On the larger scale, atomic energy can enable industry to save literally billions of dollars annually in transportation and storage costs, terminal facilities and the like.

This is not to suggest that all present power engineers are headed for the scrap heap permanently. It's just that we old-timers (and the youngsters, too) are about to be taught some new tricks by the atom if we are to survive in this highly competitive engineering field.

This is not a new situation facing the power engineer, nor is it a situation confined to power engineers. It's just another example of the fact that an engineer's education is never over. As electricity revolutionized power engineering little more than a half century ago, so the atom promises to do it again. Engineering, in its essence, is subject to constant change. Woe be to the engineer who cannot or will not adapt himself to this fact! Imagine the impossibility of the situation of an aircraft engineer who tries to operate with the methods of ten or even five years ago! Life, and particularly engineering, moves on.

Without divulging any secrets, let us explore some of the implications of atomic energy for peacetime as it affects engineers. Recent developments announced by the Atomic Energy Commission within the last month are of considerable interest in this regard.

Two basic facts loom very large in connection with the development of atom-powered reactors. The first is that



Engineers remove a can of radioisotopes from uranium pile at Oak Ridge, Tennessee. Atomic developments have already given great help to medical research.

enormous amounts of power can come from very small amounts of fissionable material. *There is the same amount of power in one pound of fissionable material that there is in two and one half million pounds of coal!*

The second important fact in connection with atomic-produced electricity is that it is expensive. Far too much so to be produced commercially at our present state of knowledge. There are many factors, however, which we shall examine, which indicate that this problem can be solved in time.

THE main reason we are devoting billions of dollars to the development of atomic energy is, of course, the uncertain military situation posed by the threat to world peace of Communist Russia. It promises to be one of the ironies of life that the development of atomic energy for peace may come as an unexpected "bonus" from our preparation for war. The vast amounts of money essential for the enormous research and development necessary to harness the atom for power for peacetime would probably not have been authorized were not the threat of war hanging over us.

Mr. Gordon Dean, Chairman of the AEC, recently noted that this is the case. He said: "The bulk of the money that has gone for atomic energy in this country has been appropriated for military reasons, but in working toward our military objectives we have managed to score a number of substantial peacetime gains."

Continuing, Mr. Dean says: "Our main immediate practical goal, is not to build a reactor that will produce power to light a city—it is to build a reactor that will produce power to propel a submarine.

"We are working on this submarine reactor first because there is an urgent need for an atomic powered submarine. Reactors will run for very long periods of time without the need for refueling. They will also operate without oxygen. For submarines, therefore, where the need is for long rang and the ability to remain submerged for very long intervals, atomic power plants are a natural.

"And so, among reactors designed for a practical purpose, we are going after the submarine reactor first. But in doing so, we are at least building a reactor that will produce useful power, and the dividend in knowledge that we gain will have a direct and immediate application to our effort to produce commercial civilian power. *As a matter of fact, it is probably very fortunate, from the peacetime point of view, that the Navy wants an atomic powered submarine, for this gives us the incentive of working on a reactor for a real, practical purpose at a time when otherwise we would probably have to stick to research and developmental machines.*"

As is generally known, there are an enormous number of possible reactor designs—so many that it is financially impossible to support them all. The gadgets are just too blamed expensive. A small experimental reactor, for example, costs from one to five million dollars. A major reactor carries at least a 25 million dollar price tag, and a big reactor comes at upwards of 50 millions.

The atomic energy program of the United States is now concentrating on the development of four kinds of reactors, the Experimental Breeder Reactor, the Materials Testing Reactor, the Intermediate Power-Breeder Reactor, and the Submarine Thermal Reactor. All four pro-

Senator George W. Malone of Nevada, a registered engineer, predicts that useful atomic energy is only a year away. Prior to his election to the Senate, Mr. Malone held many responsible engineering positions.

mise to fit into military needs, but the promise of eventual civilian power was, I understand, the main reason for backing the Power-Breeder.

ANOTHER "break" for the citizen and taxpayer lies in the fact that the stockpile of fissionable material built up for atom bombs or mobile reactors, if not used, may some day, in a more sane world than the one we now have, be ultimately available for conversion into civilian atomic energy. Quoting Mr. Dean again: "The fissionable material we are now accumulating is valuable to us as fuel. It will always be valuable to us as fuel. And, if it is never used in weapons, it can always be taken out of the Atomic Energy Commission's stockpile of weapons and put to work for the benefit of mankind. As long as it is held for this purpose, it exists as a tremendous potential dividend on the great investment we are now making in national security."

Thus, we see, it is entirely possible that many of the two main stumbling blocks to the development of peacetime atomic energy for power—the tremendous cost of research and development, and the stupendous cost of stockpiling a supply of fissionable fuel, may both someday be overcome as an incident to our military preparedness. If mankind can avoid blowing itself to bits, the atom may one day be a boon in a peaceful world.

If current reactors turn out successfully, (as indications are that they will), and if costs can be further reduced, the natural demands for reactors will increase indefinitely.

We have ample evidence of this on every hand. The first useful electric power in history has already been produced at an atomic testing station in Idaho. Britain has made use of a system for taking heat produced in an atomic furnace and using it for heating a building.

Perhaps most encouraging is the fact that eight major American companies are now seriously investigating the possibility of obtaining power from atomic energy. This indicates that industry now believes that the atomic energy program has advanced to the point where such investigations are considered worthwhile.

Several obvious impediments stand in the way. The first, the necessity for military security, is imposed upon us by world conditions and I don't see how we can do anything about that. The unfortunate by-product of this is, of course, the restriction of the flow of information and the lack of ability to put our best scientific and engineering minds freely at work to solve the many technical problems involved.

A second obvious bottleneck is the necessity for excessive shielding necessary to protect operating personnel and the surrounding area from injury from the radioactive rays of an atomic reactor. At present, seven-foot thick concrete walls serve this purpose. This is obviously a nuisance and offsets to a considerable degree one big advantage of using atomic power—the ability to pack a lot of punch into a small area.

Intense study is being given to this problem, I am informed, and prospects for shipping it are bright.

Probably the worst bottleneck in obtaining electric power from the atom is that of fuel—fissionable materials. At present, there are only three fissionable materials known: uranium—235, uranium—233, and plutonium—239.

ALL of this comes from uranium ore. Unfortunately, uranium ore is scarce. Even more unfortunately, only seven-tenths of one per cent of the uranium ore that is available is now of any use as fissionable material. This is because the most common kind of uranium—uranium-238, is not fissionable.

Thus, you can appreciate the fuel problem. Only one part in 140 of a rare metal is our only source!

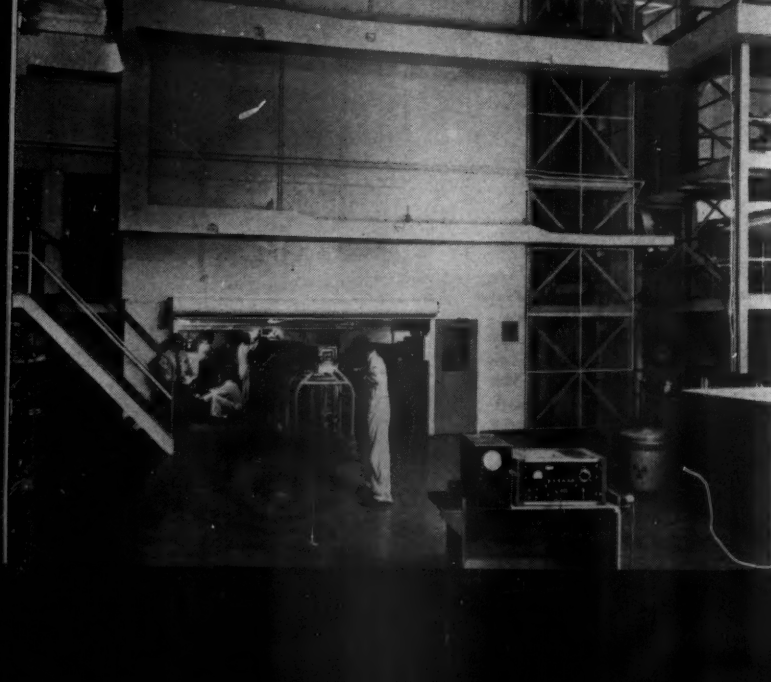
Fortunately, there seems to be a prospect of bettering the situation. Research on the "breeder" reactor promises, at least theoretically, to create more fissionable material than it consumes, thus increasing our supply of fuel.

Roughly, here is the way it would work. When the fission process is going on in a reactor, a few extra neutrons came out of each fission. On the average three neutrons come from the disintegration of each fissionable atom. One of these three neutrons goes to keep the chain reaction going, to cause another fuel atom to fission. Another is required to convert one uranium-238 atom into a fissionable form of atom which, in this case, would be plutonium.

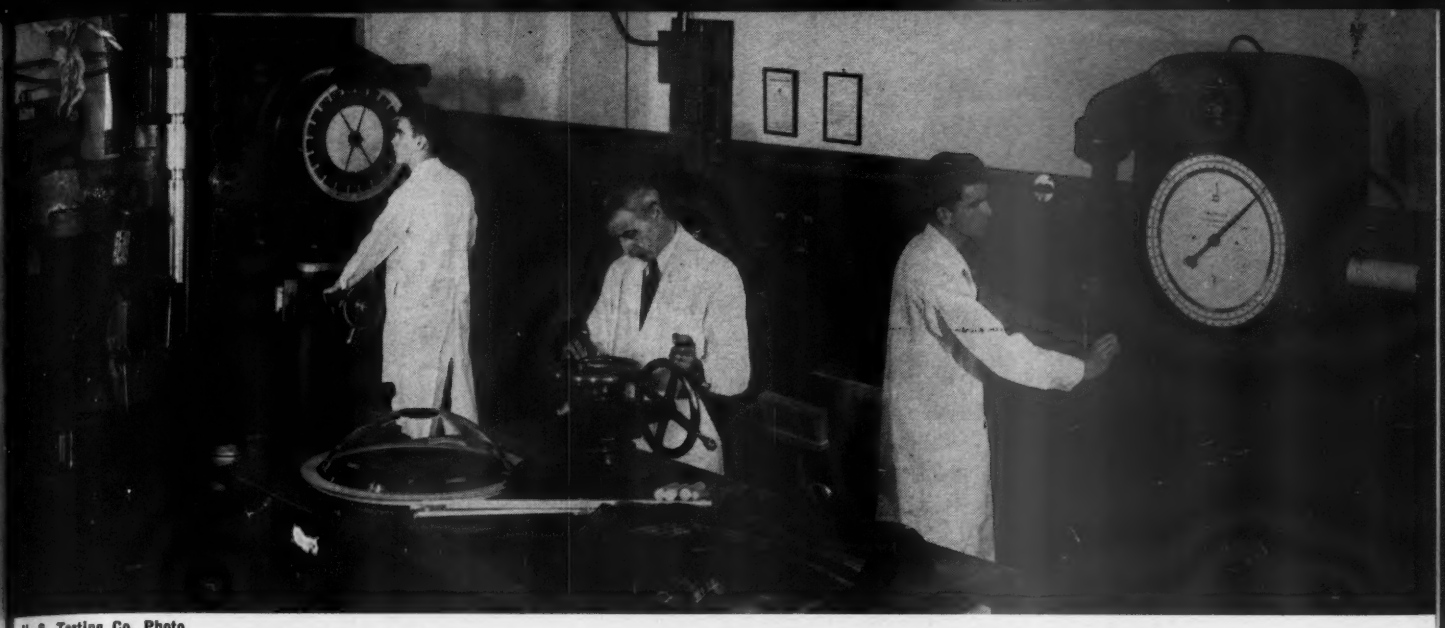
One neutron is left over. This neutron could be used to produce one more fissionable atom from another atom of U-238. If this were done after each fission process, the atom lost originally would be replaced and one additional fissionable atom would be created. In other words, as the

(*Continued on page* 32)

Loading face of atomic pile at Oak Ridge. Substances to be irradiated are pushed in with a long rod through a carrier lined with an opening in the pile. All photos courtesy the Atomic Energy Commission.



Aluminum cans containing samples to be irradiated are put on target conveyor at Brookhaven, N. Y., reactor. Conveyor can discharge samples at any time without disrupting operation of the reactor.



U. S. Testing Co. Photo

Engineers devise tortures for commercial products to reveal weaknesses.

An American Engineer Photo Story

Taking Bugs Out of Commercial Products

IN HOBOKEN, New Jersey, professional engineers working with a typical commercial testing company are constantly engaged in what appear to be Rube Goldberg activities.

One is in charge of a "herd" of voracious, "thoroughbred" moths, specially bred for the purpose, which are busily nibbling on mothproofed fabrics. Another superintends hundreds of carpet beetles feasting on rug samples. Meanwhile, the two-way stretch of a girdle is being measured by a rotating machine.

Other professional engineers work at making pressure cookers explode. (They wear face protectors and asbestos gloves.) Baby carriages are filled with heavy sacks of sand and run over the roughest terrain available. Pearl buttons are squeezed with hydraulic pressure. In "tropical chamber," where the humidity is 90% and the temperature 90°, more than 40 kinds of bacteria and fungi are introduced to test garments and other products destined for use in tropical areas.

Other engineers are pulling inch-thick ropes apart until they snap. Fabrics are burned under a gas flame to get their flammability rating. A beef stew is cooked to test an electric casserole. Fires are fed with gasoline and then a fire extinguisher is played on them. Shirts are washed 150 times in a row. An engineer brushes false teeth eight times in a row with eight different kinds of tooth paste.

These are only a few of literally thousands of tests to which commercial testing laboratories subject products—and it pays off with better goods for Americans and better profits for their makers.

The American Council of Commercial Laboratories, Inc., which speaks for the industry, says that the demand for engineering testing for commercial products comes from several reasons. Some companies, ACCL says, lack their own laboratory facilities and must depend on commercial laboratories to run their products through the mill to see that they will stand up under conditions closely like those they will meet in actual use. Other corporations, even with their own laboratories, turn to commercial testing companies for an independent report.

Such a case was recently reported by an official of the United States Department of Commerce who said:

"Despite experiences of successful product testing by company plant employees, such tests cannot always be relied upon. For example, a manufacturer of metal tools had tested a new tool line in his plant. As soon as the tools reached the market they began breaking under rough treatment and the company got many returns. The problem was given to a commercial laboratory whose engineers found that the trouble lay in the method of heat-treating the steel that went into the tools. A preliminary test in a commercial laboratory, which often includes testing the product with consumers under actual use conditions, might have located the flaw sooner and saved the firm considerable trouble!"

Another example of the "stitch in time" role the commercial testing laboratory can play is given by the report of the operator of one of them who said:

"A $3 million building involving approximately 5000 tons of structural steel was in the course of construction in this area. The interest on the money and depreciation amounted to about $500 a day. The architect provided for inspection of the structural steel in the fabricating shop, but decided not to bother with inspection of the steel in the rolling mills.

"When we came to examine the heavy rolled column sections in the fabricating shop it was found that they were twisted so badly in the cooling after rolling that they could not be used. No fabricating shop has equipment for taking the twist out of such heavy sections. They had to go back to the rolling mill. The construction of the building was delayed five weeks. Figure it out for yourself at $500 a day. A $50 bill spent on the inspection of these column sections at the rolling mill would have caught this defect at the time the columns were rolled."

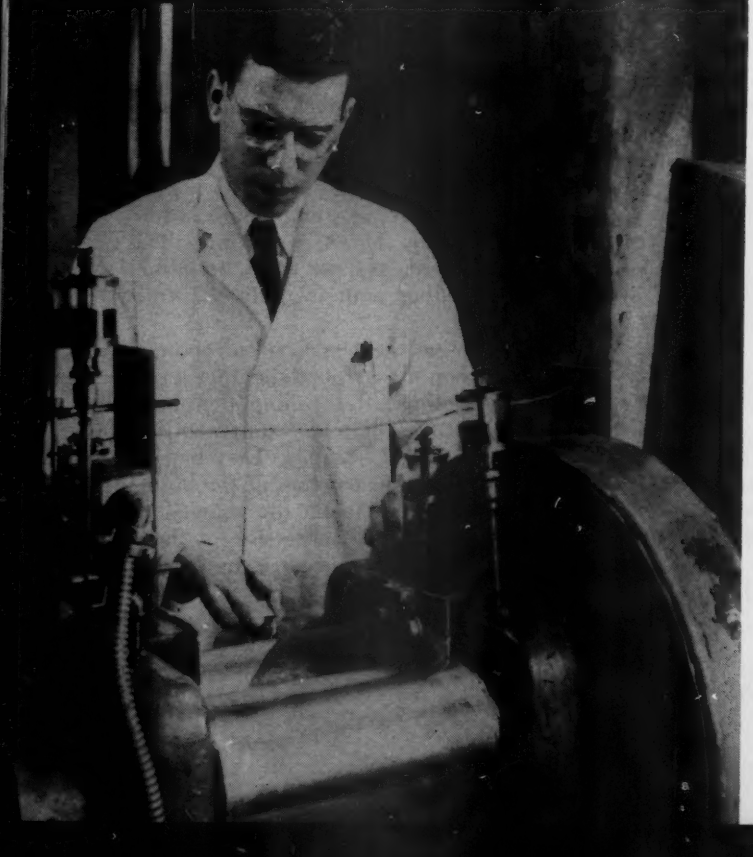
Turn to the following two pages for a graphic presentation of the way engineers are improving America's products.

Foster D. Snell, Inc. Photo

What a beating those dogs are taking! Not even the proverbial policeman pounding an all day beat could give them anything like the punishment this machine is doling out. Those shoes will "walk" thousands of miles for this unique machine to measure the show mileage they are good for.

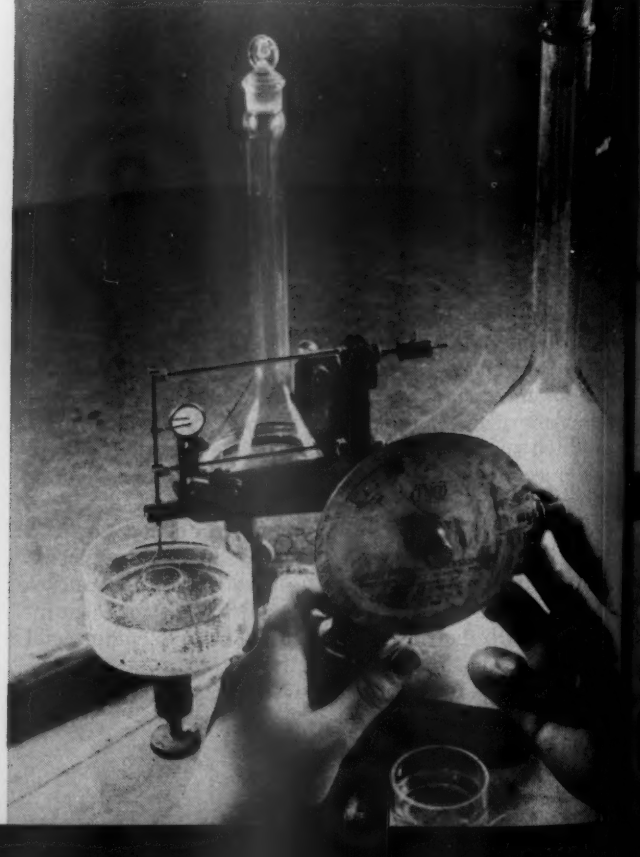
Engineer prepares experimental rubber batches for vulcanization. At the nation's commercial laboratories, products we buy are run through the mill to show how much they can take.

Foster D. Snell, Inc. Photo



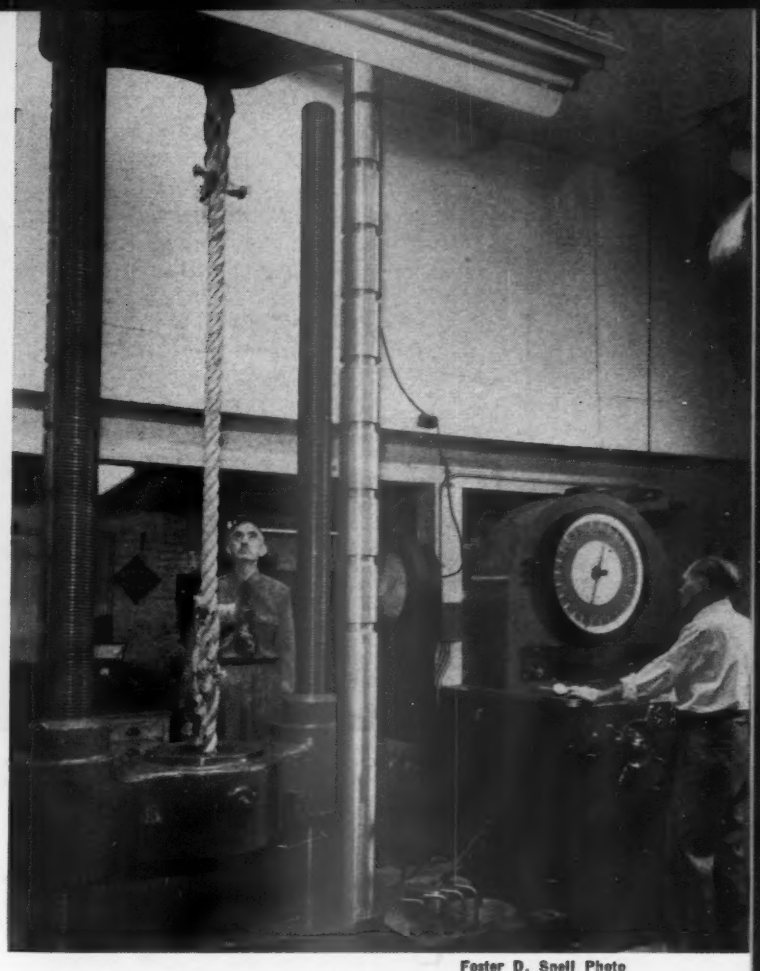
How strong is a soap bubble? This instrument measures surface tension. Other tests have voracious moths consume mothproof materials, carpet beetles chew rug samples, and machines that smoke cigarettes to measure nicotine content.

Foster D. Snell, Inc. Photo



Smith-Emery Co. Photo

Mullen tester tests the bursting strength of paper.



Foster D. Snell Photo

Rope gets a stretch in 440,000 lb. testing machine.

Does your cigarette really taste milder? This machine will find out. Cigarettes are "smoked" by this machine and results recorded on meters. Tars, nicotines and other irritants are measured.

Foster D. Snell Photo

Typical plane used in aerial mapping, a DC-3, trails an aerial magnetometer, super-sensitive magnetic gadget used to prospect for oil and minerals from the air.

Photogrammetry—New Tool For Engineers

Mapmaking, the Ancient Art of Columbus, Has Had a Face-lifting Recently. Aerial Mapping, Given Great Impetus by World War II, Can Now, Under Proper Circumstances, Greatly Speed Up Engineering Projects and Cut Costs.

By DAVID A. HELLER
Staff Writer

Engineers plan tomorrow's flight on survey mapping 85,000 sq. m. of ocean floor between Florida and the Bahamas.

Tilt corrector compensates for errors in pictures caused by uneven angle of airplane in flight.

WHEN General Dwight D. Eisenhower and his staff were planning the allied invasion of the Normandy coast in 1944, the need for accurate maps was obvious. But where to get them? Most of the maps on hand were out of date. Besides, the enemy had been erecting obstructions which, those maps, even if accurate, would not have shown.

The problem was solved in short order by photogrammetry, the art of aerial mapping. High altitude shots were taken of the entire area. Developed, the pictures were overlapped and plotted. Maps, so accurate that even obstructions like sea walls could be measured within six inches, were made. The invaders knew precisely what to expect, even to such details as how long the ladders must be to scale the sea walls.

The Normandy experience was only one of a great many similar occurences during World War II. The vast, global conflict involved fighting in many remote spots. In most of these, accurate maps simply weren't available. Since a great many of the eventual battlefields were in enemy hands, it was obviously not possible to map them by the conventional ground survey methods. Besides, that would have been too slow. The need for reasonably-accurate, workable maps showing the latest state of the terrain, was immediate.

As a result, the science of aerial mapping progressed by leaps and bounds. One result of this has been the development of a new tool for engineers.

Take an example closer to home for most readers of the AMERICAN ENGINEER. Topographic maps were recently needed for a main line highway. The transit and line method estimate was a cost of $74,400 and a time of two years. Urgency demanded a quicker and less costly way. A company specializing in aerial mapping flew the route with a mapping plane and took the necessary pictures in a day and a half. An accurate contour map was made and delivered within 90 days. The net cost on the job was $17,600.

This illustrates the twin virtues of aerial mapping—speed and low cost. About ten large photogrammetric engineering firms are in the field today. Their work is mainly divided into five broad fields: 1) determining the best location for highways, railroads, transmission and pipe lines; 2) resource surveying (forests, soil, dam sites and minerals); 3) city planning and cultural surveys; 4) plant location and 5) assistance to the Government in expediting the map-making of the nation.

AIR photography is only 5 to 8 per cent of the job. Many professional engineers are employed to plan projects and a corps of skilled technicians operate the ploting machines which work on the principle of the old-fashioned parlor stereoptican but have the precision of military range finders. These plotters are expensive gadgets—cost up to $50,000. It takes about three years to train an operator. Precision cameras and varying types of aircraft, depending on the scope of the survey, are used. In some cases, Shoran radar is used on the surface to guide the planes while in flight. Photogrammetric engineering firms now own and operate such aircraft as specially-powered Douglas C-3s, Beech AT-11s, Boeing B-17s, special photographic Lockheed PV-1s and P38s and Consolidated PBYs.

Costs of this work are related to the accuracies required. A cardinal rule of the industry is that "accuracy costs money." For maps accurate to five or ten feet the cost is relatively low. Beyond that point, accuracy is increasingly costly.

To point up the accuracy possible with aerial mapping, on one recent survey in New England, an engineer checking the finished map with the terrain, asked a farmer what happened to two mounds shown to be in the barnyard. The farmer grinned.

"Those two piles have long since been spread," he said.

Interestingly enough, although aerial mapping has come into its own on a large scale since World War II, it is an old science. Exactly one hundred years ago, a Frenchman named Laussedat compiled the first map data based on measurements from photographs. Laussedat's work was with a stereoptican much like the kind that used to be in grandma's parlor in the old days.

It was, however, a pretty crude device. Pictures were taken from mountains and other high places—the airplane had not then been invented. Handicapped by the narrow field and imperfections of the lenses of his time, Laussedat is credited with being the first man to appreciate the vast possibilities of making maps from photographs. For many years, however, little practical progress came from his efforts.

A Canadian, E. Deville, did the first practical work in

Bird's eye view shows that you can see a lot from the air.

photogrammetry. He rigged up a simple steroscopic machine for drawing a map from pictures taken from tripods placed in elevated positions on the ground. Prior to World War I, all picture mapping, as the term "photogrammetry" literally means, was done with pictures taken from tripod cameras in high places.

The Wright Brothers' celebrated device, the airplane, put an end to all that. To coin a poor metaphor, it put photogrammetry on the map as a mapmaking device. By providing a superb camera platform which moves rapidly from one station to another, it allowed enormous areas to be covered by a single snap of the shutter. One pair of overlapping photos not only could cover a lot of ground, they could and did eliminate the serious disadvantage of previous photogrammetric maps—blind spots. Spots inaccessible from the ground were easily covered from the air.

SOME of the jobs that can be done by photogrammetry are little short of unbelieveable to persons unacquainted with it. Consider, for example, the unique problem of a large industrial corporation which suspected it had lost count of the tonnage of coal in a huge and particularly valuable pile. Large is hardly the correct word to describe the pile—it was a small mountain. For inventory and tax purposes, it was important to find out exactly how much coal it contained.

Aerial mappers were called in by company engineers. Several pictures were taken of the pile. By use of stereo equipment, small-interval contours were plotted from the pictures. Calculations interpolated from the resulting contour map showed what the tonnage was.

As a result, the corporation has now given up on the tedius job of keeping up with its mountain of coal. The usual method of inventory has been dropped and once a month the pile is photographed. Stereo-plotting and calculations are made. This saves the corporation money—thousands of dollars a year and a considerable number of man-hours are made productive that would otherwise be taken up in keeping the inventory.

Another good example of an unexpected use of photogrammetry is the lumber industry. Over a period of less than 20 years, the aerial survey has made a definite place for itself in the management of forest lands. For example, a big paper company wondered how many trees it owned in its thousands of acres of forestland. It would have been possible to make a manual count, of course, but that would be costly and might take a small army of men a long time. In short, it was too costly to seriously consider. Then the engineers in the company thought of the aerial mappers. Could they count his trees? Of course—they could and did—24,000 at a time.

Through the use of aerial maps taken on infra-red film, as many as 24,000 trees were included in a single picture. The areas of old and young growth, white pine, hemlock, and hardwoods were determined, and, by the use of stereo-plotting equipment, the heights of the stands were found.

Another novel use of photogrammetry was the location of a "lost" ore vein. A valuable mine was shut down because the ore body was "lost." After spending large sums of money trying to relocate it, geologists and mining engineers enlisted the help of the aerial mappers. Large scale aerial photography and a mosaic showed an undiscovered fault which revealed which way the vein had moved. The mine was soon back in production.

Even the Boy Scouts and the clergy get into the aerial mapping act. When the Scouts recently wanted to establish a large, permanent camp, they hired an aerial mapping firm to make a survey for them to determine scientifically, from a weighing of all relevant factors, the best site.

When surveyors took air pictures and contoured the Tennessee Valley to determine watersheds, drainage, and the best locations for dams, the resulting series of photographs were so revealing that a church in Kentucky requisitioned TVA for prints so that the minister could recruit new members based on what they showed of farm houses, yards, barns and crops.

Highway, railway and pipeline location account for much of the photogrammetrist's work, though closely allied matters such as harbor and flood control, the location of transmission lines, city planning, traffic studies, slum clearance, real estate evaluation and oil and mineral prospecting are important. Even that unpopular citizen, the tax collector, uses aerial photography. Experience has proved that many tax maps are incorrect, that they wrongly place certain plots of ground and omit others. By means of a bird's eye view—literally—they are able to correct their maps. Furthermore, aerial photos give a

(*Continued on page* 32)

Overlapping templets extends ground control points and insures accuracy of photographic maps.

FROM WASHINGTON

General Professional a
NSPE News Presented
Easy-To-Read News Le
Form

Of professional interest are the results of a meeting of the NSPE Interprofessional Relations Committee, Dr. C. L. Emerson, Chairman, that was held recently in Washington . . . The meeting with representatives of a similar committee of the AIA, took these actions: Urged that due credit be given when an architect employs an engineer and vice versa . . . Urged that Chapters and States establish standard scales of compensation for services rendered by one profession to the other . . . The engineers asked AIA to extend its filing system to make it more suitable for use of engineers . . . Both groups agreed to work together to reduce the amount of professional services now rendered by the Federal government.

Another meeting of interest: 21 organizations recently met in Chicago for the purpose of forming a national federation of independent engineering unions representing 30,000 non-supervisory technical-professional employees . . . These groups include such organizations as AT&T's Association of Communications Engineers, Western Electric's Council, etc.

19 chapters of NSPE have been asked by the Federal Civil Defense Administration to spearhead surveys in their localities of engineering equipment which will be useful in the event of emergency . . . these surveys will assist state Civil Defense organizations and the FCDA in developing suggested techniques for making the inventory.

Unity note: A survey on unity recently conducted by the Pittsfield (Mass.) General Electric Engineers' Association among its members is of interest. Here are the principles for a successful unity organization set forth in the survey questionnaire and the composite vote on each item: The Unity group should include all members of the profession regardless of technical specialty (Yes: 92% No: 6%) The governing body should be directly responsible to the individual members of the Organization rather that through other societies (Yes: 89% No. 9%) There should be the maximum of participation of individual members at the local level in shaping policies (Yes: 95.5% No: 3%) Definite consideration should be given to the economic status of the member as well as his professional status in the functioning of the Unity group (Yes: 84.5% No: 13%)

It is important to note that the engineering profession in America is not alone in its problems . . . The lead article of the English magazine, The Journal of the Engineers' Guild, is entitled "Is Engineering a Profession?"

ON CAPITOL HILL: The Senate Banking and Currency Committee unanimously adopted, and will recommend passage of, an amendment removing certain categories of engineers from the salary controls as is now the case for doctors and lawyers.

Instructions have been issued to the Corps of Engineers' field offices to use standard curves whenever it is practicable to do so . . . according to the Chief of Engineers the action was taken because the newly-adopted method meets the major engineering societies' objections to past procedures.

Lost and Found Department: The Civil Service Commission reports that one government agency alone has "discovered" and advanced nearly 1500 engineers who had not previously been used in an engineering capacity.

Right, above, planning for the Annual Meeting of NSPE in Tulsa June 5, 6 and 7 are Oklahomans: center, L. L. Dresser, President of the National Society; left, Floyd Zook, Chairman of the Committee on General Arrangements; and C. S. Larkey, Chairman of Programs. Left, with slide rule and T-square and a map of the United States, Tulsa auxiliary members survey distances and try to arrive at an estimate of how far ladies from different sections will need to travel to attend the NSPE Annual Meeting in Tulsa.

Ladies in the picture are: left, Mrs. C. R. Childress, Chairman of Ladies Program, NSPE Convention; Mrs. Rolla King, Vice-Chairman of Ladies Program; Mrs. William Fell, Chairman of NSPE Ladies Advisory Committee; Mrs. C. P. Stanley, Representative from Tulsa Auxiliary to NSPE Ladies Advisory Committee.

Annual Meeting In Tulsa, June 5-7, To Be Scene of Top Professional Discussions

Oklahoma, where "the corn is as high as an elephant's eye" is preparing to extend welcome and hospitality to members of the NSPE and their families in the 17th annual convention of the National Society in Tulsa, June 5-7.

Delegates and visitors are being encouraged to make this a family vacation trip, if feasible, where business may be combined with the pleasure of exploring and enjoying the prospects of the colorful Southwest.

Professional engineers from all sections of the country will gather to: (1) discuss professional problems such as unity of the profession, public relations, improving the engineering registration laws, and other matters pertaining to the profession, and (2) to have a pleasant time doing it.

The Executive Committee begins its sessions a day earlier than the regular convention dates, meeting at convention headquarters in the Hotel Mayo June 4.

The Board of Directors meets Thursday, with Mayor C. M. Warren of Tulsa extending a welcome to the delegates and visitors. Board meetings, which will continue throughout Thursday and Friday, are open to all members.

Engineers will be addressed by G. W. McCullough, President of the Oklahoma Society of Professional Engineers, when they meet for luncheon Thursday with the Tulsa Chamber of Commerce at its weekly open forum.

Ladies will have an opportunity to get acquainted in the Metropolitan Room of the Mayo. The beautiful and style-conscious shops of the Oil Capital of the World are in the immediate vicinity. One-hundred members of the Auxiliary to the Tulsa Chapter of the Oklahoma Society will be out in force to help entertain visiting engineers' ladies during their stay in Tulsa.

Highlights of the daytime sessions for engineers Friday will be the luncheon sponsored by the Tulsa Chapter, at the Mayo. The Honorable Sam Pettigrew will speak.

A visit to the Will Rogers Memorial at Claremore will be arranged for the ladies Friday morning. In the afternoon they will be entertained at tea at the Philbrook Art Museum.

Engineers and their ladies will be entertained at dinner Friday at the Tulsa Country Club, with a floor show featuring authentic Indian stomp dancers in full regalia performing ritual dances of their tribe.

Opening session of the NSPE An-

Here Are Some of the Vital Subjects To Be Acted Upon At Tulsa

Public Relations Program
Engineers' Week
Inter-Professional Relations
National Defense Activity
Young Engineer Activity
Engineers-In-Training Work
Work With Registration Boards
Negotiating Defense Contracts
Chapter Activities
Awards
Rules of Ethical Conduct
Engineers' Creed
Telephone Listings
Enforcement Procedures
Engineering Education
Unity Discussions
Salary and Fee Schedules
Membership Status
Registration Reciprocity
Ethical Advertising

nual Meeting is scheduled for 9 A.M. Saturday. The afternoon session will include an interprofessional forum with representatives from the professions of law, medicine, and architecture joining engineers in a discussion of common professional interests. The noon luncheon, held in the Crystal ballroom of the Mayo, will feature an address by Major General Bruce Clark, First Armored Division, Ft. Hood, Texas.

Repeating a feature for the ladies which proved popular at the Annual Meeting in Minneapolis last year, the Ladies' Auxiliary Committee and the Ladies' Advisory Committee of NSPE will sponsor an Open Forum meeting Saturday morning which will provide opportunity for an exchange of ideas on activities and interests of wives of professional engineers. NSPE President-elect, John D. Coleman, who is also Chairman of the Ladies' Auxiliary Committee of NSPE, will address the group on the activities of this committee during the past year.

The annual banquet of NSPE is set for Saturday evening with Dr. Kenneth McFarland giving the principal address. Favors by Chief Wolfrobe will be conferred on the ladies present. Dancing in the Crystal Ballroom with music by the Southernaires will climax the traditional occasion.

Visitors will have an opportunity of viewing the original setting of the famous musical "Oklahoma!" and see for themselves the "bright golden haze on the meadow" when they journey to the Flying L Ranch of NSPE President L. L. Dresser Sunday morning. The aroma of barbecued beef fresh from the Flying L pits should add to that "Oh what a beautiful morning" atmosphere. After the feast, peace and relaxation under spacious skies will mark the end of the 17th Annual Meeting of NSPE.

Program

Wednesday, June 4

9 A.M.—Meeting, Executive Committee, Metropolitan Room; 12 Noon—Informal Luncheon Ex. Comm.; 2 P.M.—Executive Committee Session Continues, Metropolitan Room; 4 P.M.—Registration Desk Opens, Mezzanine Floor; 8 P.M.—Executive Committee Session Continues, Metropolitan Room.

Thursday, June 5

8 A.M.—Registration Desk Opens, Mezzanine Floor; 9 A.M.—Meeting, Board of Directors, Ivory Room; Invocation; Welcome, Mayor, City of Tulsa, C. M. Warren; (Board Meeting Open to all members); 12 Noon—State Society Luncheon with Tulsa Chamber of Commerce Weekly Open Forum, Chamber of Commerce Bldg., G. W. McCullough, President, Oklahoma Society of Professional Engineers, Presiding; 2 P.M.—Meeting, Board of Directors, Ivory Room; 3 P.M.—Ladies and children leave for Woolaroc Museum, Bartlesville; 4 P.M.—Members leave for Woolaroc for tour of Museum; 6:30 P.M.—Buffalo Barbecue Dinner on Picnic Grounds at Woolaroc Museum.

Friday, June 6

8 A.M.—Registration Desk Opens, Mezzanine Floor; 9 A.M.—Meeting, Board of Directors, Ivory Room; 12 Noon—Luncheon Sponsored by Tulsa Chapter, O.S.P.E. President Wright Canfield, Presiding; Address—Honorable Sam Pettygrew; 2 P.M.—Meeting, Board of Directors, Ivory Room; 6 P.M.—Refreshment Hour, Tulsa Country Club; 7 P.M.—Dinner, Tulsa Country Club (Engineers and their Ladies).

Saturday, June 7

8:30 A.M.—Registration Desk Opens, Mezzanine Floor; 9 A.M.—N.S.P.E. Annual Meeting, President L. L. Dresser, Presiding; 12 Noon—Luncheon: Presiding, Dean E. R. Stapley, Okla. Institute of Tech., Address, Major General Bruce Clark, First Armored Division, Ft. Hood, Texas; 2 P.M.—Annual Meeting, N.S.P.E. Inter-professional Forum; 6 P.M.—Refreshment Hour, 16th Floor (Engineers and their Ladies); 7 P.M.—Annual Banquet, Crystal Ballroom, Presiding, William H. Carson, P.E., Dean School of Engineering, Oklahoma University; Address, Dr. Kenneth McFarlin, V.P. of Public Relations, General Motors Corp.; 9 to 12—Annual Dance, Crystal Ballroom.

Sunday, June 8

7 A.M.—Leave for "Flying D Ranch," Talihina, where as guests of President L. L. Dresser, Engineers and their families will enjoy one of his famous barbecues at noon.

Ladies' Program

Thursday, June 5

9 A.M.—Ladies' Headquarters and registration desk opens, Metropolitan Room, Hotel Mayo; 10 A.M.—Ladies' Special Tours in private cars to scenic spots in Tulsa and to internationally famous Frankoma Potteries, Open Luncheon at Bit of Sweden Restaurant (optional); 3 P.M.—Ladies and children leave for Woolaroc Ranch for tour of Museum and barbecue supper with engineers.

Friday, June 6

8:30 A.M.—Breakfast and business meeting Ladies' Advisory Committee, NSPE; 9:30 A.M.—Ladies' Special trip in private cars to Will Rogers Memorial at Claremore, or alternate trip to Gilcrease Museum in Tulsa; 2 P.M.—Tea at Philbrook Art Museum with informal tour of the Museum and gardens; 6 P.M.—Refreshment Hour, dinner and entertainment at Tulsa Country Club, Engineers and ladies.

Saturday, June 7

10 A.M.—Open Forum Meeting sponsored by Ladies' Advisory Committee, NSPE, Metropolitan Room, Hotel Mayo. Report by John D. Coleman, Chairman of Ladies' Auxiliary Committee, NSPE; 12 Noon—Ladies' Luncheon, Emerald Room, Hotel Mayo. Mrs. William Fell, Chairman, Ladies' Advisory Committee, NSPE presiding. Address by H. P. Mathieu, President, Texas Society of Professional Engineers; 6 P.M.—Refreshment hour, Annual Banquet with engineers; 9 P.M.—Annual Dance, Crystal Ballroom.

Sunday, June 8

7 A.M.—Leave for Flying D Ranch, Talihina, where as guests of President L. L. Dresser, Engineers and their families will enjoy one of his famous barbecues at noon.

Why Not

Make Your

Reservations

Now?

NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

Eighteenth Annual Meeting
June 5-6-7, 1952

Tulsa, Oklahoma
Mayo Hotel

Please make a Hotel reservation for me at your Hotel. I will arrive at approximately _____ a.m.-p.m. on the _____ of June and plan to depart at approximately _____ a.m.-p.m. on the _____ of June. I would prefer a:

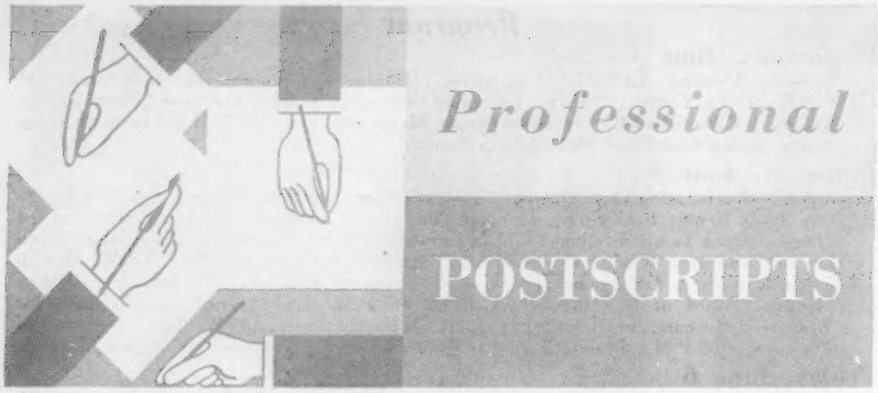
	RATES FROM
☐ Single Room	$ 5.50
☐ Double Room (with double bed)	$ 8.50
☐ Double Room (with twin beds)	$ 9.50
☐ Suite (One-Two-Three Room)	$25.00

(Air-conditioning, $1.00 per day per room)

Name _____

Address _____

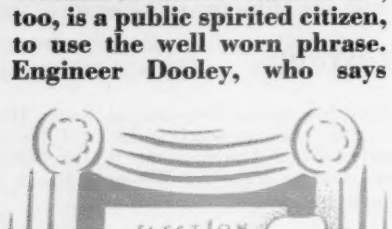
City _____ State _____



This is your department. Your contributions to it are solicited. We want your views on subjects that affect the engineering profession directly or indirectly. Please keep your contributions short, and remember that editing may be necessary to conserve space. Your name may be omitted if you desire. — *The Editor.*

Taft, Eisenhower, Kerr. Stevenson. Kefauver. Dooley.

Dooley? Who's Dooley? Well, James Dooley, P. E., is Director, Macon Chapter, Georgia SPE, and he belongs with the illustrious company mentioned above because he, too, is a public spirited citizen, to use the well worn phrase. Engineer Dooley, who says



NSPE has inspired him to take an active part in public life, writes that he has just finished some politicking down in Fort Valley, Ga. He ran for mayor and, sad to relate, was beaten by only 77 votes. But then we claim a "professional" victory for Dooley, and hail him with a "Better luck next time!"

PP

Our next correspondent hails from Minneapolis, Minn., and as this is written we find ourselves hoping that he is not floating down the Mississippi along with the rest of the flood-plagued Mid-west.

Welcome to Engineer-writer Harold Kaiser and here are some things he'd like to say about "The Stereotyped Engineer." O.K., Mr. Kaiser, it's all yours . . .

PP

"At college I majored in chemical engineering. My minor was liberal arts so I spent a good part of my time on the non-technical side of the campus. My non-engineer friends were a diversified lot who hardly ever agreed with one another on anything. That is, anything save one point. Whenever anyone said engineering student, a mental image popped into their minds of a rugged looking sort of fellow, carrying a slide rule, a vocabulary consisting almost entirely of weird sounding words, and very little of a certain commodity called culture. My friends assured me I was different and certainly not typical of what an engineer really is. Quite a compliment.

"Our anthropologists would laugh at the idea that there is a characteristic expression associated with engineers. Perhaps the rugged look is because, unlike his contemporaries in the social sciences, he spends all his mornings in lectures, his afternoons in labs, and the evenings studying. He doesn't quite see the practicability of white bucks, sport coats and the like. Or maybe the low female density in his classes makes the daily shave seem unnecessary. I think the critics would have a hard time picking out the rugged looking engineer from the demur low student at the senior prom.

"The slide rule, we'll all agree, is an identifying feature of an engineer. This part of the sterotype is justified.

"It's inconceivable that a person could go through years of specialized training without having certain technical words become a part of his every day vocabulary. Some technical words associated with specific professions have become common in daily use. For example: neurotic, atom, supply and demand. Other terms like ethnic, femur and adiabatic have not become familiar. Engineers have a language of their own, but this is true for almost every profession.

Engineers usually speak and write in a less flowery style than others, and in general, I think they express their thoughts more coherently. From the first theme in freshman English to the last grad school thesis the method is the same; clear, concise and to the point. Authors such as Steinbeck and Hemingway have achieved recognition with the same techniques, so it must have merit.

"Let's examine the last part of our mental picture. I've got to take issue with the idea that engineers are lacking in culture. Mr. Webster says culture is 'that which is considered good in the intellectual and aesthetic realm.' Culture, as I see it, is not one set of books or one group of painting or one bit of knowledge. There is nothing special or sacred about *Rembrandt's* art or Chopin's music or Plato's writings which makes them *the* culture. I think there are many cultures, each in harmony rather then in conflict with the others.

"Consider the philosopher whose very title implies culture. He uses the wisdom of the ages in his research for truth. A noble person. Consider now the engineer. He also uses the wisdom of men before him in his search for the physical truth. Is he a less cultured or less noble man for using the theories of Newton and Einstein instead of those of Aristotle and Kent? I think not.

"There is an art in science. It's as embracing and exciting as any scheme of music or drama. Every engineer must have felt the beauty and magnificence that comes when a secret of nature is disclosed or when a theory is advanced that suddenly relates a series of inconsistent facts. Much has been written about how a composer weaves a theme through his music which makes simple melodies into something grand. Just as wonderful is the engineer who weaves his knowledge through the realm of physical experience and comes out with a structure or a ship or an airplane. When I first saw Boulder Dam I was filled with admiration for the artist, beg pardon, the engineer who conceived and built it.

"How is it the 'cultured' decide that we engineers, the 'uncultured,' are in the wrong? They say they have culture. We aren't like them. We, therefore, don't have culture, or at best have an inferior brand. Their whole argument is based on the assumption that they and not we have culture. It is true that they are probably more familiar with the social sciences, but we know more about the physical sciences. We could come back with the same kind of argument. We could

say that ours is the culture and their culture is outside of our exclusive circle. Neither of these arguments is very good, but they do illustrate the point that there is no sharp division between that which is not culture.

"Those who criticize our lack of a certain kind of culture are in a unique position. They have assigned themselves the role of legislator, prosecutor, jury and judge. They set standards, charged us with not reaching them, found us guilty, and as punishment have decided to burn us in effigy. Needless to say, this one man trial is highly irregular.

"We've examined the stereotype closely, let's see how much of the mental picture fits. Rugged looking? Well, maybe. Slide rule? Sure. Overuse of technical words? Yes, but it's not limited to engineers. Lacking in culture? *Well, what do you think?*"

PP

All right, AE readers, what do you think? We believe Engineer Kaiser has dealt real blows to some popular myths about engineers. Or don't *you* think they are myths? At any rate, we're pulling out of the argument right now and moving to high ground. We want *your* opinions expressed here.

PP

Engineers and Hell. That may seem an unlikely subject for such an eminient engineer as D. B. Steinman to write about, but it his been our experience that D. B. can discourse on many things and do it well. Here is one of the great bridge builder's latest parables; we're certain you'll enjoy it.

PP

"One day three men—a Lawyer, a Doctor, and an Engineer—appeared before St. Peter as he stood guarding the Pearly Gates.

"The first man to step forward was the Lawyer. With confidence and assurance, he proceeded to deliver a glib and eloquent address which left St. Peter dazed and bewildered. Before the venerable Saint could recover, the Lawyer quickly handed him a writ of mandamus, pushed him aside, and strode through the open portals.

"Next came the Doctor. With impressive, dignified bearing, he introduced himself: 'I am Dr. Brown,' he announced. St. Peter received him cordially. 'I feel I know you, Dr. Brown. Many who preceded you said you sent them here. Welcome to our City!'

"The Engineer, shy and retiring, had been standing in the background. He now stepped forward modestly. 'I am looking for a job,' he said. St. Peter wearily shook his head. 'I am sorry,' he replied; 'we have no work here for you. If you want a job, you can try the other place.' This response sounded familiar to the Engineer, and made him feel more at home. 'Very well,' he said; 'I have had Hell all my life and I guess I can stand it better than the others.' St. Peter was puzzled. 'Look here, young man, what are you?' 'I am an Engineer,' was the reply. 'Oh yes,' said St. Peter; 'do you belong to the Locomotive Brotherhood?' 'No, I am sorry,' the Engineer responded apologetically; 'I am a different kind of Engineer.' 'I do not understand,' said St. Peter; 'what on Earth do you do?' The Engineer recalled a definition and calmly replied: 'I apply mathematical principles to the control of natural forces.' This sounded meaningless to St. Peter, and his temper got the best of him. 'Young man,' he said; 'you can go to Hell with your mathematical principles and try your hand on some of the natural forces there!' 'That suits me,' responded the Engineer; 'I am always glad to go where there is a tough job to tackle.' Whereupon he departed for the Nether Regions.

"And it came to pass that strange

reports began to reach St. Peter. The Celestial denizens, who had amused themselves in the past by looking down upon the less fortunate creatures in the Inferno, commenced asking for transfers to that other domain. The sounds of agony and suffering were stilled. Many new arrivals, after seeing both places, selected the Nether Region for their permanent abode. Puzzled, St. Peter sent messengers to visit the place down below and to report back to him. They returned, all excited, and reported to St. Peter:

" 'That Engineer you sent down there,' said the messengers, 'has completely transformed the place so that you would not know it now. He has harnessed the Fiery Furnaces for light and power. He has cooled the entire place with artificial refrigeration. He has drained the Lakes of Brimstone and has filled the air with cool, perfumed breezes. He has bored tunnels through the Obsidian Cliffs and he has flung bridges across the Bottomless Abyss. He has created paved streets, gardens, parks and playgrounds, lakes, rivers, and beautiful waterfalls. That Engineer you sent down there has gone through Hell and has made of it a realm of industry, peace, and happiness."

PP

Up until a couple of years ago the great debate was. "*What* is an engineer." Now, of course, that has been changed to "*Where* is the engineer?" No single group seems to have dropped out of circulation quite so completely as qualified engineers. Latest word to Postscripts on the subject comes from a P.E. in Texas who wishes to remain anonymous. All right, here's Mr. X from Texas.

PP

"The hue and cry: 'Where are the Engineers?' is getting louder. Articles, speeches, etc. are rolling off the presses and the rostrums bewailing the present and future shortage of engineers. Could this be 'crying in the wilderness'?

"What does the profession of engineering offer that is attractive and inviting, except hard work? Has the world heard the engineers boasting and boosting their profession to the stars? Does their professional morale stand out like a lighthouse?

. . . "Some years ago, Dr. Elkton Mayo of the Harvard School of Industrial Research was quoted as saying: 'While the material efficiency and the efficiency of machinery has been increasing for two hundred years, the ability of people to work together has been continuously decreasing.'

"Engineers have long been noted for their egotism and their introvert tendencies. For almost a century, a few engineers have pleaded with the other engineers to join their professional societies and work together for advancement . . ."

"Unfortunately, the curriculums of most of our engineering colleges have not been planned to diminish the introvert tendencies in the young men that their technical studies seem to aggravate, nor have these curriculums enlightened them particularly on the importance of human relations and

(*Continued on page* 30)

With Our Members . . .

Many Colorful Exhibits

Pennsylvania Society Annual Meeting Scheduled For Pittsburgh On May 15-17

The Pennsylvania Society will hold its Annual meeting at Pittsburgh May 15, 16 and 17.

The convention opens with a tour of Pittsburgh's newest skyscraper, the United States Steel Company's new office building. Exhibit Rooms will display more than 140 interesting exhibits including scale models of the Point Park Project, The Penn Parkway and the Greater Pittsburgh Airport.

Official opening of the convention will be on Friday the 16th with a welcome address by Mayor David L. Lawrence. A bus tour of Allegheny County where visitors will see, under construction, the projects they saw in miniature in the Exhibit's Rooms follows. An Inspection Trip of the University of Pittsburgh and the Cultural Center of Pittsburgh is scheduled. The President's Dinner Dance will provide the entertainment for Friday evening.

Saturday morning will be occupied with the Annual Meeting and the afternoon offers the Symposium with a panel of nationally prominent leaders discussing engineering problems. The Convention closes Saturday evening with the Annual Banquet and another nationally prominent speaker.

Mrs. Glen Moore Comstock has planned a full schedule of events For Women Only.

Dr. Steinman's Rise Traced By Feature In N.Y. Daily Mirror

David B. Steinman, first President of the National Society of Professional Engineers, was recently given a two-column write-up in the *New York Daily Mirror*, which describes him as "The Poet Who Writes in Steel."

The column traced vividly Steinman's rise from the slums in New York to the position of the world's leading bridge builder. It recounted that in 1921, he was unable to find a job for three months. Steinman became a consulting engineer when a friend offered to rent him office space cheap. His first fee was five dollars. But within a few months, Holton D. Robinson, who built the Manhattan and Williamsburg bridges, asked Steinman to join him in a competition to build the Florianapolis Bridge in Brazil, the longest suspension bridge in the world. They won, and Steinman was on the route to success.

Ohio President

Raymond A. Freeze, new President of the Ohio Society. At recent annual meeting in Cleveland, Freeze took office. Other officers elected include: Wallace T. Adams, 1st V.P.; Ronald A. Gordon, 2d V.P.; Charles P. Smith, 3d, V.P.; Paul M. Miller, Secretary; Burt F. Wyandt, Treasurer and Robert E. Allen, National Director. Edward Larson is the immediate Past President.

Ray Freese Elected To Ohio Presidency; Robbins Addresses Group

Newly-elected officers of the Ohio Society include the following:

President, Raymond A, Freese, Cleveland; Vice-pres., Wallace T. Adams, Middletown; Vice-pres., Ronald A. Gordon, Wilmington; Vice-pres., Charles P. Smith, Columbus; Treasurer, Burt F. Wyandt, Lima; Secretary, Paul M. Miller, Chillicothe; Past Pres., Edward Larson, Cincinnati, and Nat. Dir., Robert E. Allen, Univis Lens Co., Dayton.

Over 1,100 attended the Annual Convention in Cleveland recently.

NSPE Executive Director Paul H. Robbins outlined the objectives of the National Society.

Arkansas Engineers Hold Harmonious Meet With State's Architects

On March 24, a joint committee composed of members of ASPE and the Arkansas Chapter AIA, met for a dinner meeting at the Hotel Marion in Little Rock, as guests of the ASPE. This was a preliminary meeting for the purpose of getting acquainted and to determine what topics should be discussed and studied.

The spirit of the meeting was not only one of cooperation but of an enthusiastic cooperation. It was found that differences in professional thinking between the two professions do not exist as far as the members of the joint committee are concerned. It is believed that this committee can lay the ground-work for relations between the professions that will be beneficial to both Engineers and Architects.

Central Illinois Chapter Hears Professor Talk On Undeveloped Areas

Professor Leo Stine of John Millikin University spoke before the Central Illinois Chapter on "Undeveloped Areas, International" at the Chapter's March meeting.

Florida Society Issues Attractive Roster; Sets Forth Society's Aims

The Florida Society has put out a very attractive "1952 Year Book of the Florida Society of Professional Engineers."

Names and addresses of members are given. The objectives of the Society are set forth, officers and directors are listed, chapter boundaries outlined, the canon of ethics is set forth, and the Constitution and by-laws are stated.

Officers and members of other societies might wish to consider putting out a similar roster. Herbert S. Saffir is the editor. His address is 1301 Courthouse, Miami, Florida.

Albany Chapter Hears Panel Discuss Building Under NPA Priorities

The Albany Chapter of the New York State Society recently held a discussion on "Construction Under the Controlled Materials Plan." Speakers included representatives of the National Production Authority, the General Electric Corporation, Joseph L. Ottenheimer, P.E., commenting for Albany Chapter members, a contractor and an architect.

Colorado Society Explores Mysteries Of Rainmaking

You've heard the old saying, "Everybody talks about the weather, but nobody ever does anything about it."

That's not true in Colorado where the state society devoted its March meeting to the interesting and controversial subject "Weather Modification." (Rain making, the meeting committee says, is a term to be shunned.)

Tom Swearington of the Colorado Resources Development Corporation led the discussion and a new film, "Pipeline From the Skies," was shown.

Van Praag Talks To Springfield, Ill., Group On Engineering

Past NSPE President Alex Van Praag recently spoke on engineering before the Rotary Club of Springfield, Ill. Members of the Capital Chapter, the Springfield Engineers Club, The American Society of Civil Engineers, American Institute of Electrical Engineers and the Illinois Highway Association were honored guests. NSPE Member J. Walter Marquardt introduced the guests and Mr. Van Praag.

George Nicastro Speaks Before Hudson Chapter On Society, Profession

NSPE Vice President George Nicastro visited the Hudson County Chapter of the New Jersey Society recently and spoke on "Your Society and Our Profession."

Engineer Nicastro is a past President of the New York Society and has served as President of the New York Chapter for four terms. He is employed by Combustion-Engineering Superheater, Inc. of New York City.

Connecticut Seniors Guests At Hartford Chapter Meeting

Members of the Senior engineering class of the University of Connecticut were guests of the Hartford Chapter at a recent meeting. Engineer George A. Nagel gave a brief summary on "What NSPE Means to the Engineer."

An illustrated lecture, *The Eternal Flame*, traced the history of the natural gas industry from its infancy to the present.

Gopher State News

Minnesota Society Names New Officers; Hal McWethy New Executive Secretary

H. D. (Hal) McWethy of Minneapolis will take over the duties of Executive Secretary of the Minnesota Society, the *News Letter* of the Minnesota Society announces.

New members of the Minnesota Society are Charles E. Doell, President; W. L. Hindermann, President-elect; W. M. Beadie, Secretary; A. W. Tews, Vice President; and W. S. Ekern, Treasurer.

The Society recently turned over more than $100 to the Heart Fund and the Institute of Technology fund. The money was earned in a novel way which will be of interest to American Engineer readers. During Engineers' Week, a "Quiz of the Twin Cities" was held on radio station WCCO with members of the St. Paul Chapter competing against members of the Minneapolis chapter.

The St. Paul engineers defeated their rivals by the close score of 90-80. Prize money was turned over to the charities. Contestants for St. Paul were: Ted Waldor, Jim Ryan, L. L. McGladrey, C. H. Bussard. For Minneapolis the lineup was: L. P. Zimmerman, T. S. Thompson, Art Tews, Ken McGhie.

Height of Land chapter elected the following new officers: H. A. Pabst, President; Ervin Hency, Vice President, and Phil Hanson, Secretary-Treasurer.

Alabama Society Gives Prize, Plaque For Best Essay On Engineering

Albert Lee Stancel, Jr., a junior electrical student at Alabama Polytechnic Institute has won the 1952 Annual Engineers Essay Contest between the engineering students of the University of Alabama and the engineering students of Alabama Polytechnic Institute.

The contest is sponsored by the Alabama Society of Professional Engineers.

This year's essay was titled "Why I Chose Engineering as a Profession." For his paper on this subject Stancel received a cash award and his college, Alabama Polytechnic Institute, holds the bronze plaque during 1952. This plaque goes each year to the college presenting the winning essay.

Presentation of the plaque was made at a recent meeting of the Birmingham Chapter, Alabama Society of Professional Engineers. Principal speaker was James B. Allen, Lt. Governor of Alabama.

Detroit Member Gets 3-Year Term On City Planning Group

Miss Hazel I. Quick, P.E., a member of the Detroit Chapter, was appointed to a full three-year term as a member of the Detroit City Plan Commission. She had previously filled out an unexpired term of a member who resigned. Miss Quick was formerly a research engineer for the Michigan Bell Telephone Co.

Elgin B. Robertson Explains Steps Taken To Unify Profession

Elgin B. Robertson, National Director from Texas and a member of the Professional Engineers' Conference Board for Industry, which issued NSPE's first Public Relations Report on "How to Improve Engineering - Management Communications," spoke to the San Jacinto Chapter recently.

Piedmont Chapter Hears Moon Talk On Paper-Making

The Piedmont Chapter of the South Carolina Society recently heard D. G. Moon, Head of the Pulp and Paper Department of J. E. Sirrine Company, speak about the history and origin of paper making and its relationship to the development of paper manufacturing in the South.

Among those present were distinguished guests, prominent in the paper industry, from Newfoundland and England.

Wichita Chapter Nominates Manire For Presidency

The following have been nominated for office in the Wichita, Kansas, Chapter:

President, B. L. Manire; Vice President, D. J. Mull; Secretary, I. S. Hall; Treasurer, O. W. Daniels, and Director, C. F. Morris.

Pittsburgh Sets Their Tongues To Wagging

At the Invitation of the AMERICAN ENGINEER, Pittsburgh Chapter Tells how It Began a Highly Successful Speaker's Bureau and a Class in Public Speaking. NSPE Members Will Find It Interesting, and Other Chapters May Wish to Follow Pittsburgh's Example.

By

Lloyd R. Bowman, P.E. and Donald E. Vierling, P.E.

Members, Pittsburgh Chapter

EVERYBODY talks about an engineer's supposed inability to speak for himself but few ever do anything about it. The Pittsburgh Chapter found that, before an audience, an engineer is about as talkative as the Sphinx—and about as easy to get before an audience.

With a Chapter Area that includes five counties comprising the industrial heart of Western Pennsylvania, the Chapter is constantly called upon to furnish speakers to talk about engineering subjects and the Engineering Profession. Most of these calls formerly went unanswered. Last year, the Board of Direction decided to do something about it. They decided to form a Speakers Bureau.

With over 800 active members on the Chapter rolls, they canvassed the membership for volunteers and found thirty-nine willing members. Careful screening resulted in the appointment of twelve to the Speakers Bureau.

The arrangement sounded good, but it didn't work too well. Speakers wanted speeches prepared for them or the material furnished from which they could fashion their own talks. They wanted coaching, an opportunity to practive their speeches before critical audiences. Then there was the question of publicity for the Speakers Bureau.

There's one thing you have to admit about a Pennsylvania Dutchman. He's bullheaded. Despite a slow start, the Chapter didn't give up. The successful formation of a Speakers Bureau was given top priority on the agenda for this year's Public Relations Committee. Then they appointed Engineer Lloyd R. Bowman, Chairman of the Public Relations Committee. Engineer Bowman is a graduate of all Dale Carnegie's courses. Engineer Donald E. Vierling, a graduate of Carnegie Institute of Technology with a BS degree in Chemical Engineering, was named director of the Speaker's Bureau.

Engineer Lloyd Bowman leads discussion at public-speaking class held in connection with Carnegie Tech. Purpose is to train members to speak well and fill requests for speakers to talk about engineering subjects to civic groups. It's fun and great self-improvement too!

A publicity campaign was launched through the Chapter Publication, *The Pittsburgh Engineer*. The need for the Speakers Bureau was established. The need of engineers with public speaking experience was shown. The two needs were reconciled by offering a tuition-free course in Public Speaking.

Dr. John Warner, President of Carnegie Institute of Technology, was approached with the idea that Carnegie Tech and the Pittsburgh Chapter should co-operate in offering a course in public speaking. He agreed.

News-releases went out to 24 daily newspapers and the 66 weekly newspapers published in the Chapter Area and Bulletins were sent to more than 300 industrial and engineering firms. Both carried a schedule of sessions through June 18, 1952 and a list of topics for discussion at these sessions and the subjects for the speech each member would be called upon to give at each session.

The response was amazing. We had hoped for twenty members. One hundred eighty-two enrolled. Sessions are held in a lecture hall in the Engineering Building on the campus of Carnegie Tech. Attendance varies from a high of sixty-six to a low of sixteen, depending upon such things as the weather, over-time, civic-operas, Shrine Circuses and various sporting events.

The class got the "works" on the first night. Each member was called upon to take the platform, introduce himself, tell where he works, what he does, what his nickname is and why. Those who had no nicknames were given nicknames. For most of the members, this was the largest audience they had ever faced. For many, it was the first.

Some of the methods used, judged by conventional methods of teaching public speaking, are unique. Results prove them effective. Object of the first four sessions was to teach the members how to overcome fear or "stage-fright." Each session was carefully planned so that the members gave their speeches under the most adverse conditions. Mental processes leading to fear had been explained. Symptoms by which students could recognize the approach of fear before it had frozen them were explained. Simple rules for overcoming fear were given.

At the second session, while each member was giving his talk, Bowman and Vierling held whispered conversations, moved from one part of the room to another, consulted with other members of the class, and made themselves generally obnoxious.

At the third session, specially selected members were placed in the front rows to "heckle" the speakers as they spoke. At the fourth session, two speakers were called upon to give their speeches at the same time. At the fifth session, a commercial photographer was hired to take flash bulb

Engineer Arn Zimmer bore up well under heckling at Pittsburgh's public-speaking class.

pictures of each speaker as he spoke. Under these conditions, it is no wonder that every member has broken down at least once, experiencing the very thing he dreads most—fear. But every member recovered, finished his talk, and went back to his seat with a new confidence in himself. He had met fear and had overcome it.

Members receive pointers on the errors most public speakers make. Their speeches receive constructive criticism and constructive compliments from the other members of the class. Rules for the elimination of speech barnacles, for holding audience attention, for the use of gestures and all the other tricks of public speaking have been given and practiced, for each member must give a short talk at every session. They attend to learn, not to listen.

That these sessions and these methods have been and are continuing to be a success is evidenced by the fact that more than twenty members have already been advanced to the staff and are filling speaking engagements before high school classes, civic and service clubs and other professional organizations. As fast as other members show the required proficiency, they will be advanced to the staff. In six short months the Pittsburgh Chapter has certainly set their tongues to wagging.

Cooperation Between Society, Industry

Kings County Chapter, M. W. Kellogg Co., Team Up To Give Refresher Course

The M. W. Kellogg Co., one of the leaders in the petroleum refinery design field, is currently sponsoring refresher courses for fifty of its design engineers. These are designed to serve as a general academic review of engineering fundamentals and also to help prepare the men for the New York State Professional Engineering license examinations.

Experienced instructors have been drawn from the Kings County Chapter of the New York State Society of Professional Engineers as well as from the Kellogg Co. This is another example of the degree of cooperation between the Society and industry to help qualified individuals to obtain their engineering licenses in accordance with the registration laws.

The program has been so enthusiastically received that the Kellogg management plans to make this opportunity available to the maximum number of its engineering personnel in the future.

Since the inception of this program, there have been a number of inquiries from other companies interested in sponsoring such a review series. Inquiries should be directed to:

Education Committee,
Kings County Chapter, N.Y.S.S.P.E.
117 Remsen Street
Brooklyn 2, N. Y.

Roemmele Nominated For New York County Chapter Presidency

The Nominating Committee of the New York County Chapter has reported to the President the following nominees for office; President, Herbert F. Roemmele; 1st Vice President, Peter J. Kranenburg; 2nd Vice President, Harold H. Funk; Secretary, Felix Viola; Financial Secretary, R. B. Richardson, and Treasurer, Edward D. McOwan.

Mobile Chapter Gets Its Charter In City Hall Ceremonies

The Mobile Chapter of the Alabama Society was recently presented its Charter at a meeting held in the Council Chamber of the Mobile City Hall. L. L. Dresser, President of NSPE, was present and spoke briefly about the philosophy of the engineer.

W. J. McRoy, President of the Alabama Society, presented the charter.

Monmouth-Ocean Chapter Hears Doctor Talk On Heart Disease

Twenty-five members of the Monmouth-Ocean Chapter of the Society of Professional Engineers, met Wednesday night at Crystal Brook inn, when they heard guest speaker, Dr. Aram Captanian speak on, "Development of Abnormalities of the Heart." Dr. Captanian is staff physician at Monmouth Memorial Hospital and Hazard Hospital. He was assisted by Dr. Alfred Henderson, chest surgeon at Monmouth Memorial Hospital, who showed slides illustrating various phases of heart surgery.

President George C. Jorgensen, conducted the business meeting. Leonard G. Grasser gave a report on plans for the semi-annual outing and shore dinner, to be held in September. Others on this committee include, Kenneth Fox, John Parsons, August F. Postel, Raymond Smith, Henry Germond, John Kiely, Craig Haaren and H. Wallace Bond.

Sportscaster Husing Plugs Engineers' Week With Spot Announcements

Engineer John B. Walsh, Chairman of the New York Society's Public Relations Committee, reports that Ted Husing, well known sports announcer and newscaster, gave the profession a helping hand during Engineers' Week.

Mr. Husing made a number of spot announcements re Engineers' Week, and even requested his listeners to join with professional engineers in observation of the week, Mr. Walsh reports.

New Hampshire Puts New Teeth Into Its Registration Law

Since 1945, New Hampshire has had a permissive registration law for engineers. However, legislation enacted by the General Court, which became effective on January 1, 1952, makes registration mandatory for "any person in either public or private capacity practicing or offering to practice engineering."

At Wilmington

Senators, Governor, Congressman Attend Delaware's Ladies' Night

The guest list of the Delaware Society's Second Annual Ladies' Night held recently in the Gold Ballroom of Wilmington's du Pont Hotel reads like a list of Who's Who in the state.

Present were United States Senators J. Allen Frear and John J. Williams (the latter recently won nation-wide recognition for his role in exposing the Internal Revenue tax scandals), Governor Elbert N. Carvel and U. S. Representative J. Caleb Boggs, who has declared as a candidate for Governor.

Governor Carvel of Delaware addresses meeting on the subject of "Government." Important figures in Delaware public life attended session sponsored by DSPE.

Standing left to right: Clarence H. Evans, President, Delaware Society of Professional Engineers; Mrs. Evans; Elbert N. Carvel, Governor of Delaware; John J. Williams, U. S. Senator, Delaware; Mrs. John E. Healy, 2d; John E. Healy, 2d, President, Tau Beta Pi; J. Allen Frear, U. S. Senator, Delaware; Mrs. Frear; J. Caleb Boggs, U. S. Representative, State of Delaware.

Theme of the evening was "Government." A round-table discussion was held and questions were fired at the officials from the floor. The attendance was 219—over 70% of the Society's membership. Delaware President Clarence H. Evans was Chairman of the Meeting and John E. Healy, President of the Tau Beta Pi Alumni Association, was Master of Ceremonies. Members of Tau Beta Pi and their wives were guests.

Senator Williams discussed corruption in Federal offices. He outlined the events leading to the present investigation of the Internal Revenue Bureau and pointed out that it was difficult for a department to investigate itself and arrive at a decision that there was any lack of virtue in its agents.

Senator Frear praised the engineering profession for its contributions to the present high standard of living and stated that everywhere that one looked there were evidences of its accomplishments.

Representative Boggs, who arrived late after a day-long session on the Budget Bill in the House of Representatives, stated his opinion that the House has been working very seriously and conscientiously to cut the fat out of the bill while leaving the funds necessary for efficient service and defense. He pointed out that people from all over the country were writing to their representatives about high taxes.

Governor Carvel discussed the future of the educational system in Delaware and the highway provisions to accommodate the extraordinary amount of traffic which is resulting from the Delaware Memorial Bridge.

Porter New President Of Rockford Chapter

Rockford Chapter of the Illinois Society recently met for the first time under the direction of its new officers. They are:

President, Lyle B. Porter; Vice President, Royce Johnson; Secretary, H. A. Riedesel; Chapter Representative, John G. Duguid; Director, Past President, Charles N. Debes, and Director, Past President, William H. Howard.

Engineers Can Help Revitalize Our System NSPE President Says

L. L. Dresser, President of NSPE, called upon engineers to "help lead a revival of the American spirit of free enterprise," at a recent visit to Jacksonville, Florida.

He recommended that engineers visit national shrines to rekindle the American spirit within themselves. The engineering profession can revitalize our system by taking more active leadership in civic affairs, Dresser said.

Philadelphia Nominates Bordon, Kriebel For Chapter Presidency

The Nominating Committee of the Philadelphia Chapter presented the following slate at the March meeting:

President (one to be elected) John M. Borden, Nelson Kriebel.

Vice President (two to be elected) Edwin Elliott, Ralph W. Hoch, George W. Kraemer.

Secretary—H. E. Corl.

Treasurer—George Cook, Jr.

Directors (three to be elected) George Kelso, Robert H. Merz, Frank W. Myers, Robert G. Pfahler, Howard H. Sheppard, Edward H. Skirving.

Alternate State Director—Herbert A. Russell.

Allen Re-elected Treasurer

Coleman President; Thomas, Dougherty, Shoch, Seeger, Forrest, Williams Veeps

John Dawson Coleman of Dayton, Ohio, has been officially elected President of NSPE for 1952-1953, the Teller's Committee reports.

The election results were tabulated as follows:

For President:

John D. Coleman	7,528
Write in for others	11

For Vice Presidents:

Northeastern Area:

Clarence T. Shoch	7,414
Write in for others	8

Southeastern Area:

Dean N. W. Dougherty ..	7,359
Write in for others	6

Central Area:

Edwin W. Seeger	7,418
Write in for others	3

North Central Area:

C. Y. Thomas	7,388
Write in for others	1

Southwestern Area:

T. Carr Forrest, Jr.	7,410
Write in for others	3

Western Area:

William D. Williams	7,366
Write in for others	3

For Treasurer:

Russell B. Allen	7,479
Write in for others	2
Invalid and Blank ballots ..	118

Engineers C. V. Millikan, R. K. Lane and NSPE President L. L. Dresser engage in Civil Defense panel discussion at Oklahoma Society annual meeting.

Oklahoma President Given Symbolic Bull By Tulsa's Mayor

The Oklahoma Society held a successful annual meeting recently in Tulsa with 171 members present. Mayor George Stoner of Tulsa presented his good friend, retiring OSPE President Fred G. Fellows, with a piggy bank in the form of a Hereford Bull.

The gift, the Mayor said in a spirit of levity, was symbolic of Fellows' most extraordinary ability in handling the bull. G. W. McCullough was elected President of the Oklahoma Society to succeed Fellows.

Record Attendance Marks Ohio Society's 73d Annual Meeting

A record-breaking crowd of 561 persons attended the 73d Ohio Society Convention in Cleveland recently. Included were 123 ladies, 82 guests and 50 state and national officers of NSPE.

The State Presidents' conference was held in conjunction with the OSPE convention.

A group of 125 men and women boarded chartered buses for an inspection trip of General Electric's Nela Park and Lamp Works.

An outstanding speech was given by J. C. McKeon, manager of university relations for the Westinghouse Electric Corp., on "Training for Professional Responsibility." McKeon stressed the importance of properly training the nation's young engineers so that greater productivity per engineer may be obtained during these days when a critical shortage of such personnel exists.

Incoming President Ray Freese receives gavel from Ed Larsen, outgoing prexy of the Ohio Society in ceremony at recent annual meeting. At right: Floyd Redick, P. E., Judge James G. Stewart of the Ohio Supreme Court, Ed Bischoff, P. E., and Ted Cochran, P. E.

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By Mrs. William Fell
Ladies Advisory Committee

The number of ladies auxiliaries in the NSPE has increased one hundred per cent in the past year according to a report made by John Coleman, Chairman of the Auxiliary Committee, to the Executive Board March 15.

A survey made in April, 1951, following the appointment of the Auxiliary Committee, revealed that there were twelve auxiliaries to local chapters of NSPE in existence at that time. By March this year the number of such organizations had mounted to twenty-four according to information received by the Auxiliary Committee.

A Ladies Advisory Committee, consisting of one representative from each existing auxiliary, has been working with the Ladies Auxiliary Committee in devising a model constitution and other aids intended to assist groups who want to organize. The Advisory Committee, with Mrs. William Fell of Tulsa as Chairman, and Mrs. H. K. Rigsbee of Austin as Vice-Chairman, is currently working on promoting attendance at the NSPE Annual Meeting in June.

It was 8 to 10 at the Texas Annual Meeting in Galveston last January when it developed that eighty per cent of the engineers present had brought their wives to the convention.

The Auxiliary to the Nueces Chapter, Texas SPE is proudest at the moment of its participation in Engineers' Week this year. During the week they entertained with tea, honoring the wives of officers in all technical and engineering societies in the area.

Organized a year ago in February, the Auxiliary to the Dallas Chapter Texas SPE reports a growth from 30 to 92 members. Their first party was an "ice breaking" party for husbands at the Engineers Club; this was followed during the year by two book reviews, a Christmas tea, a Leap-year dinner and dance for husbands, a tea and card party, a luncheon and style show.

Los Angeles Hears Talk On Propulsion Of Jet Engines

J. W. Cochrane recently spoke before the members of the Los Angeles Chapter on the subject "Jet Propulsion." A sound film in color on the subject was also shown.

Lincoln Chapter Holds Guest Night; Invites All Non-Member Engineers

The Lincoln Chapter of the Pennsylvania Society recently held its second annual "guest night" to which all registered, non-member, professional engineers in the chapter area were invited.

William A. Toperzer, past President of the Philadelphia Chapter, gave a talk on "The Great Pyramid."

President Dresser Gets "Five Dollar Tour" When He Visits Las Vegas

L. L. Dresser, of Tulsa, Oklahoma, president of the National Society of Professional Engineers, was the guest of honor at a dinner meeting of the Southern Nevada Chapter, in the private dining room of Hotel Thunderbird recently.

Mr. Dresser was welcomed to Nevada by Lt. Governor Clifford Jones and to Las Vegas by Mayor C. D. Baker. Mr. Dresser, in thanking the local group for the entertainment provided during his visit, commented that, in Tulsa the special deluxe tour was the five dollar one and that he felt he had received the five dollar tour on Lake Mead, and "The Dam" in Boulder Canyon.

Mr. Dresser called upon engineers to take a more active part in civic affairs. He stated that, "the engineer is so engrossed in guiding the development of our industrial and technical revolution, that has become hidden behind his accomplishments and the accompanying social revolution which has escaped his ken, seriously needs the guidance of his trained mind."

California Has Great Potential, Holman Tells San Joaquin Chapter

State Director Herman Holman of the San Joaquin Chapter reports that the last session of the State Directors was highlighted with discussions on aids in increasing membership.

Statistics show last year that California had a 11% increase in membership compared to the National increase of 4.5%. California now has over 500 members with a potential in the State of 24,000. Director Holman announced the site of the annual meeting, which will be held May 15-17, to be the Biltmore Hotel in Los Angeles.

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The Last Roundup . . .

Final Reports on Engineers' Week

As a final "wrap-up" story of Engineers' Week, 1952, THE AMERICAN ENGINEER includes brief accounts of news received too late to include in our last issue.

From the Free State of Maryland, National Director Owen W. Turpin reports that Governor Theodore W. McKeldin attended a banquet meeting of the Maryland Society in Baltimore and addressed the group. Colonel A. J. McCutcheon, District Engineer for the Washington Area of the Army Engineers, was the principal speaker.

Director Turpin says: "The observance of Engineers' Week by the Maryland Society and the combined efforts of its members were more than repaid by the manner in which our programs were received by Mr. and Mrs. John Doe."

The Kansas Society feted the week in a big way. Governor Edward F. Arn proclaimed Engineers' Week. In Topeka, Wichita, Kansas City, Leavenworth, Troy, Olathe, Atchison, Salina, Clay Center, Pittsburgh, Independence, Manhattan and Ottawa, newspaper articles, features and pictures paid tribute to the engineering profession. Radio, too, joined in the fete. Spot announcements, speeches, tape recordings of "The Dream Builder," all helped bring home the contributions of engineers to the public.

A jet engine was placed on exhibition in the state capitol at Topeka and excited a considerable amount of comment.

In Racine, Wisconsin, Mayor John E. Gothner proclaimed Engineers' Week, and radio stations in Waukesha and Racine presented "The Dream Builder." Student actors at the Washington Park High School presented "A Leap In The Dark," the NSPE script depicting the building of the Brooklyn Bridge. Talks were given before the Rotary, Kiwanis, the Optimists, and before high school student groups. Donald C. Bengs, Chairman of the Southeast Chapter's Engineers' Week Committee, reports new acquaintanceships made by the Chapter, considerable publicity gained, and recognition for professional engineers as a result of the week.

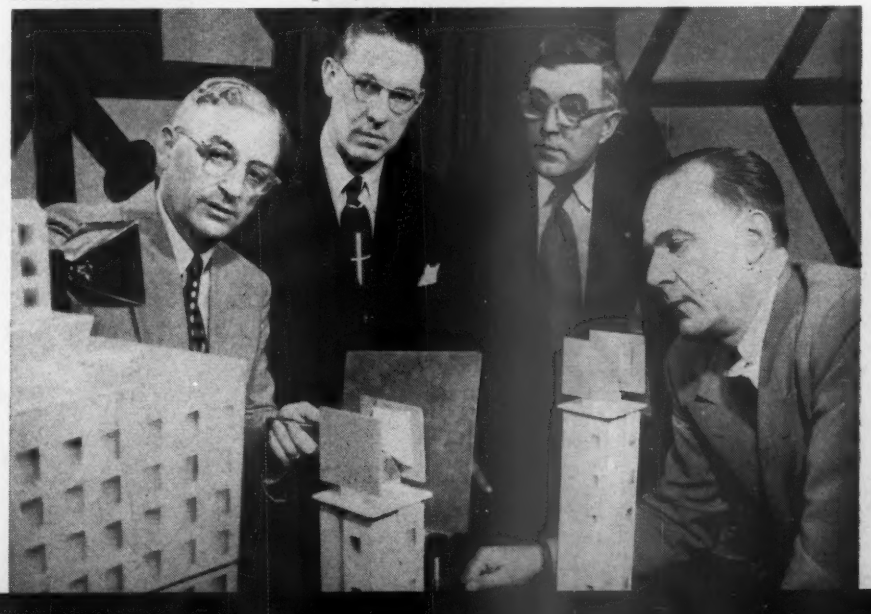
At the Canton, Ohio, Chapter, W. J. Hagenlocher, Chairman of the Publicity Committee, reports that there were 35 exhibits of manufacturing companies in four cities, and many radio spot announcements. He reports that Engineers' Week greatly stimulated the work of the Chapter, with quite a few new names added to the membership rolls and that many old members who had dropped out, returned to the fold. High point of the celebration was a Washington's Birthday Dinner. This was attended by many guests as well as the membership. William E. Umstattd, President of the Timken Roller Bearing Company, was toastmaster and Earle C. Smith, Chief Metallurgist of the Republic Steel Corporation, was the main speaker.

In Maryland . . .

The Governor actually signing the proclamation before the Officers of The Maryland Society of Professional Engineers. Reading left to right: Manus McGeady, Vice President; Louis G. Smith, Vice President; Governor Theodore R. McKeldin; Owen W. Turpin, National Director; James J. O'Donnell, President.

In Racine . . .

The Optimist Club of Racine, Wis., celebrated "National Engineers Week" with a micro-wave demonstration. Here, from left to right, are Earl Austin, of Bell Telephone; Bob Sullivan, vice-president of the club; Don Bengs, assistant city engineer, and Russ Wagner, program chairman. Bengs was Engineers' Week chairman for Southeast Chapter, Wisconsin SPE.



Postscripts

(*Continued from page* 19)

the necessity of developing personality as aid to their professional success.

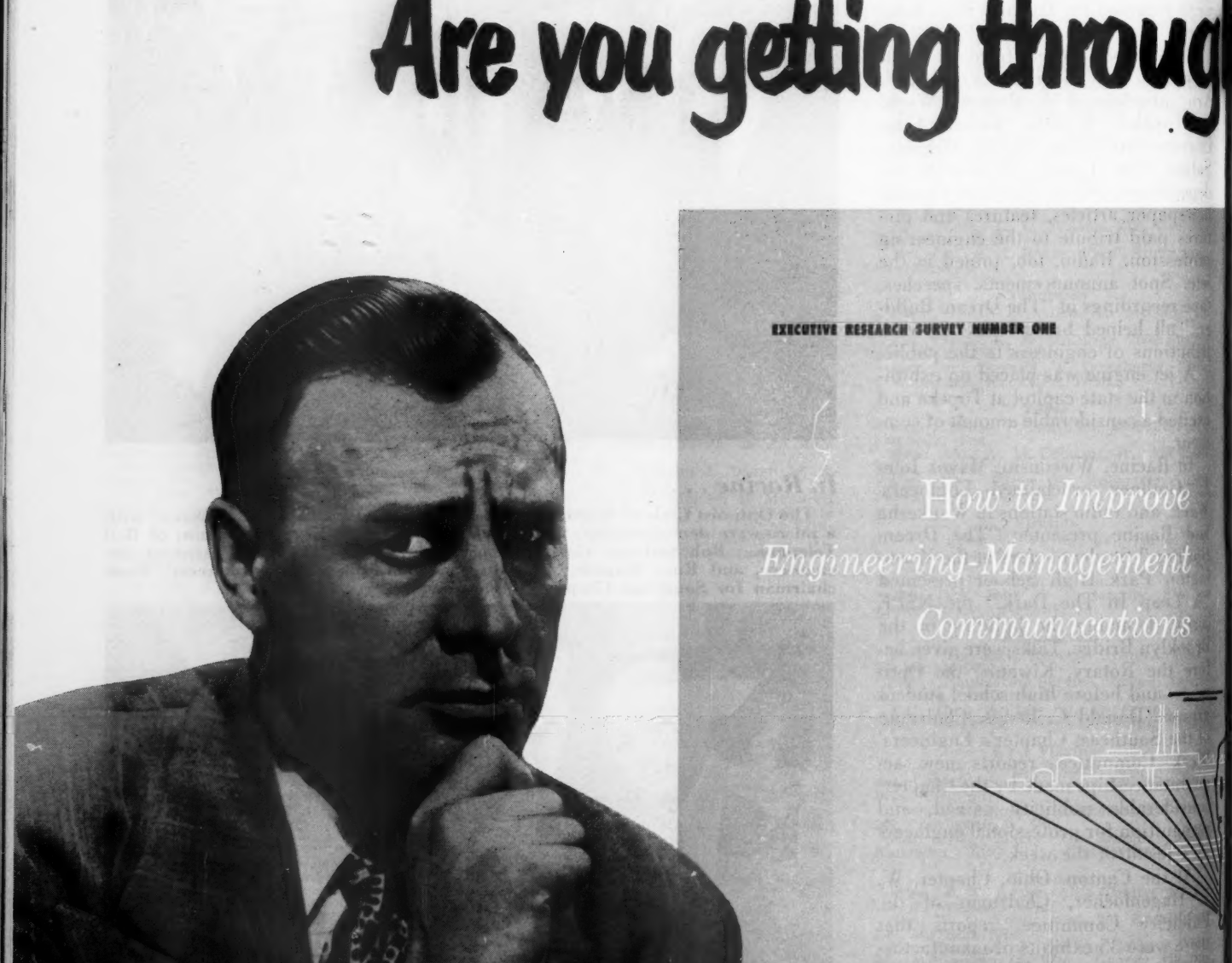
. . . "The large turnover in engineering organizations and the constant moving about are not inviting to the security minded youngsters who have grown up in these 'New Deal' years. They are interested in pensions, insurance, and bonus plans which are not easily established for men who may have an average job tenure of less than twelve months. When so many of the engineers are employees rather than employers, they are desperately dependent on those salary checks. They are not free agents, able to stand alone against the authority and pressure of employers who insist on doing things contrary to proper engineering practice. This does not offer an inviting picture to the young engineer who has been pointed and briefed all through his college years on the importance of the high ethics of the profession.

"This same dependence has also worked against the recognition by the public that is so dear and vital to the profession. The forced performance of engineering works under pressure from public officials or private influence has acted against the engineering profession. The engineering publications for years have warned of the results of crowding cities in small blocks and on narrow streets, yet when the realtors request it, the engineers proceed to layout the same old plan over and over again. The engineers have preached on flood control and the dangers of deforestation and of crowding stream channels for many, many years, but the public is slow to listen or heed. Does such futility offer inducements for more engineers?

"The engineers seem to be somewhat reluctant to accept and adopt changes when they apply directly to their personal activities. They devote much time and effort to the development, perfection and use of new products and devices for their employers, but there are still many engineers who write their reports and specifications in long hand, who look on mechanical calculators as a lazy man's convenience, and consider inter-communication systems and other modern office equipment as unnecessary fol-de-rol.

"It also appears that some branches of the engineering profession have been too busy, or too complacent to

Are you getting through t



give thought to the tools they use themselves, else why should engineers be using horizontal measuring devices almost the same as those used by George Washington? Why do they still use the laborious, error-pregnant methods of keeping survey notes when photographic devices have been developed for recording in so many of the other professions? Even the standard drafting tables and stools are hangovers from the counting houses of the eighteenth century. Do such tools invite new candidates to the profession?

"Where are the engineers?

"They are leaving the profession to work in other fields where working conditions are better, where salaries are more liberal and particularly more equitable, and where there is more recognition of the trend toward security compensation and social consciousness among the personnel.

If the profession intends to improve and to establish its prestige, and to increase its membership, the older engineers in executive and administrative positions will have to learn the importance of the humanities in their business relations and make their organizations genuinely pleasant places to work. The younger engineers will have to be taught these same things in connection with their engineering training so that they will be capable of becoming proper administrators. . . ."

That winds it up for this month. Be with us next issue won't you? We'll be publishing more letters, clippings, etc., about things and people you enjoy knowing about.

By the way, when are we going to hear from you?

—The Editors

go the Front Office?

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Atomic Energy

(*Continued from page* 8)

reaction proceeds more fissionable material would be produced than consumed.

When and if a successful breeder-reactor is developed and a more abundant fuel supply is assured, atomic technology should develop by leaps and bounds. A more abundant fuel could lower prices enormously.

The matter of prices brings us down to the final obstacle—high cost. As has been pointed out, reactor costs are high at present, and nuclear electric power is uneconomical. However, a start into the civilian power field may be possible by use of by-product electric power with military requirements for fissionable material carrying most of the cost of the development and construction of reactors.

We have to have the military atomic material anyway—if a civilian atomic electricity can be developed from it as an inexpensive by-product, we will have received an unexpected bonus on the war research. Take a specific example of how this might work:

Fissionable material producing reactors release enormous amounts of heat which can be converted into civilian electric power. A reactor for the dual purpose will cost more than a reactor for turning out fissionable material only, but not too mueh more. It appears that operating costs will not be much larger.

LONG range trends seem to favor nuclear central station power. In a new technology costs are constantly going down. Meanwhile, the cost of power from competitive sources of power is going up. Oil is becoming increasingly scarce and the cost of coal is continually going up. We will reach the stage where some civilian nuclear power can be produced. First, as a by-product, and later as the primary product.

With further reference to the commercial feasibility of Atomic energy —feasibility is a relative term—if you mean Atomic power to compete with Hoover Dam power delivered at the switchboard for two mills per kilowatt in my State of Nevada then it is a long time away—but if you are discussing power to raise the water 2500 feet in a wet mine at Eureka, Nevada, where there is an estimated $100 million worth of zinc-lead ore with the power generated by deisel engines, transporting fuel 500 miles with power costing 3 or 4 cents per KWH then you are in business now.

Universities and colleges throughout the country have, generally speaking, remained self satisfied—fat—and contented—and the world moved away from them through the advent of a completely new technical field.

It is a revolutionary step and the men who are at the top do not know where it will lead—much research and experiments must continually go on—the colleges must get in step and furnish the new trained manpower—they can only do that through sending their professors to school and improving their basic nuclear physics and chemistry courses — and including enough nuclear technology to prepare the graduate to enter the field under proper direction.

The field will include new and improved methods of beneficiating Uranium ores (our university of Nevada has been chosen for a research project in this connection)—the field of radiation and the effect on animal and human life, water and soils—biology and medicine—power and metallurgy.

To me it seems only a matter of 1 to 2 years time before the practical use of atomic energy is at hand.

Tool

(*Continued from page* 14)

good idea of changes of propety valuation for assessment purposes, since they give a wealth of cultural detail. By aerial photography, the burden of taxation is passed around more fairly.

The foregoing has shown that photogrammetry and aerial surveying can do a great variety of interesting, sometimes slightly incredible, tasks. But its main bread and butter work is as a tool of the working engineer.

To take a specific example of the work done in highway location, consider the case of the Pennsylvania Turnpike extensions.

Costing more than $125,000,000, these were two stretches of road, one running 208 miles east from Carlisle, Pa., to Philadelphia, and the other 20 miles west of Pittsburgh to the Ohio state line.

ALL initial grade, route and grade separation studies, fill removal and other cost estimates were based on contour maps produced by photogrammetry. The completed map for the eastern extension was for an area a mile wide and 140 miles long. The cost was $82,000 or less than $1.00 an acre. The western map covered 68 miles in length at a cost of $56,102 or about $1.29 an acre—more than the eastern map because of a rougher topography.

ENGINEERS constructing the Alcan Highway and the airports en route had their maps supplied by the flying picture-takers. Both the government and private photogrammetric engineering firms participated in the work. The work done in locating railroads is similar. Some enthusiastic railroad men say that if photogrammetry had been available before the first rails were laid in America, it would have caused cities to be better located and fewer railroad receiverships and passed dividends.

Engineers interested in flood control and the development of the Missouri Valley's defenses against the ravages of water (See *Do We Need a Missouri Valley Authority?* in the December, 1951, AMERICAN ENGINEER) will be interested to note that the largest single survey ever made at small contour interval, an 800 mile survey from Yankton, South Dakota, to St. Louis, has been made by an aerial mapping concern for the U. S. Army Corps of Engineers. The greater part of the work was contoured at two-foot intervals.

Mining engineers are finding aerial maps a great boom. Of aid in prospecting, the maps collect facts about the roughest kind of terrain, where, perversely enough, most minerals seem to be found. Other important engineering considerations like computing overburden, water supply, highway, rail and water facilities and the planning of industrial communities, are also made easy.

Mosaic maps are widely used by city and county engineers. Since they show a wealth of cultural deail, they are useful in engineering planning ... for new developments . . . annexation proceedings, park and forest development, public works planning and many other fields.

In myriad ways, in almost every field of engineering, the "new" science of photogrammetry, coming into its own after a full century of existence, promises new and improved ways of doing things. Photogrammetry has made gigantic strides in the last decade and the future promises even more. Already it has opened new horizons as a tool of the engineering profession.

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See Page 30

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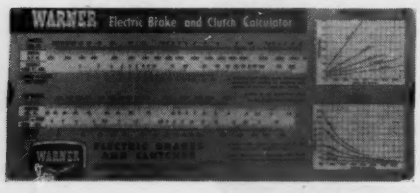
What's New

As a service to our readers, this column will describe briefly new product developments of general interest to professional engineers. For further information concerning these products, we will appreciate your filling in the coupon provided for this purpose, and mailing it to the American Engineer.

● A new electric brake and clutch specification "calculator" is now available. The device was designed to determine the size and specifications of electric brakes and clutches needed for all types of industrial machinery.



Included in the data instantaneously furnished by the calculator are: Stopping and starting time; mounting specifications; performance curves and formulas; torque ratings; and heat calculations. ***Item one.***

● Thick pads of paper can now be stapled as easily as a few sheets with a new desk model stapler.

The Heller Desk Stapler is a compact, yet powerful stapler that can stitch booklets, folders, magazines, maps, blueprints, time cards and perform many other fastening jobs.

Using the principle of long leverage and combining it with cam-action, this stapler accomplishes heavy work without effort. It is light in weight, takes up very little desk space and has a sure grip rubber-cushioned base that cannot mar the finest finish.

Anvil or stitching head in interchangeable and the gate requires no tools to open. ***Item two.***

● A new combination drill, the B-36, offers all three drilling methods, rotary, auger, and percussion, in the same rig. This new Mobile Drill has a hydraulic feed of approximately 8,000 lbs. pressure.

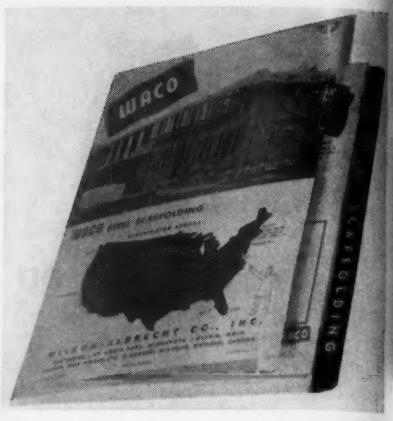
The carriage of the drill and the drill mast are of tubular construction. For cross-country travel with a maximum over-all height of 10 feet, the drill mast nests in the tube members of the drill carriage.

Together with the feed cylinder, the drill mast telescopes hydraulically to an operating height of 16 feet.

Approximately 150 feet is the B-36 maximum depth for auger drilling without water; depth for rotary drilling with water is in excess of 300 feet.

The light weight of the unit, which can be mounted on any truck with a power take-off, makes moving over very rough terrain, with ease, possible. ***Item three.***

● A revised, "1952" edition of the Waco File Folder, a package file including all standard Waco literature, catalog sheets and test data, has been announced.



Made of heavy enamel cardboard stock, the 8½" x 11" folder is distributed as a permanent file for monthly mailings of Waco literature and other information pertinent to scaffold erection, use, safety measures, etc. At least 12 of these mailings will be made to file folder holders during 1952. ***Item four.***

● A folder on Hallemite's cold process built-up roofs, the flexible, interlocked, all-weather roof covering, and one on Halcoloid roof protection, is available for any business, industrial or institutional building owner interested in repairing or completely resurfacing his roof.

These folders explain and illustrate exactly how a properly constructed one- or two-ply built-up roof is installed. ***Item five.***

● Parallel lines, either horizontal, vertical or diagonal can be spaced from a thousandth part of an inch up to an inch or more on any size sheet, with the Paraliner Forms Ruler. A controlled index wheel on the Paraliner board is set against a measuring scale at the desired space. Then the ruling edge is moved forward with slight pressure of thumb and forefinger, while the person operating it draws the lines already set by the index.

The Paraliner Line-up and Light Table is an all-steel frame table with the Paraliner Ruler built into a glass board which lights up from the inside. An added feature is the ruling measure, controlled by micrometer precision. The entire glass table top will tilt and will rotate completely on an axis and will lock at any angle. It is also useful in drafting and engineering layouts because of the built-in micrometer precision instrument. ***Item six.***

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